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Vol. 943 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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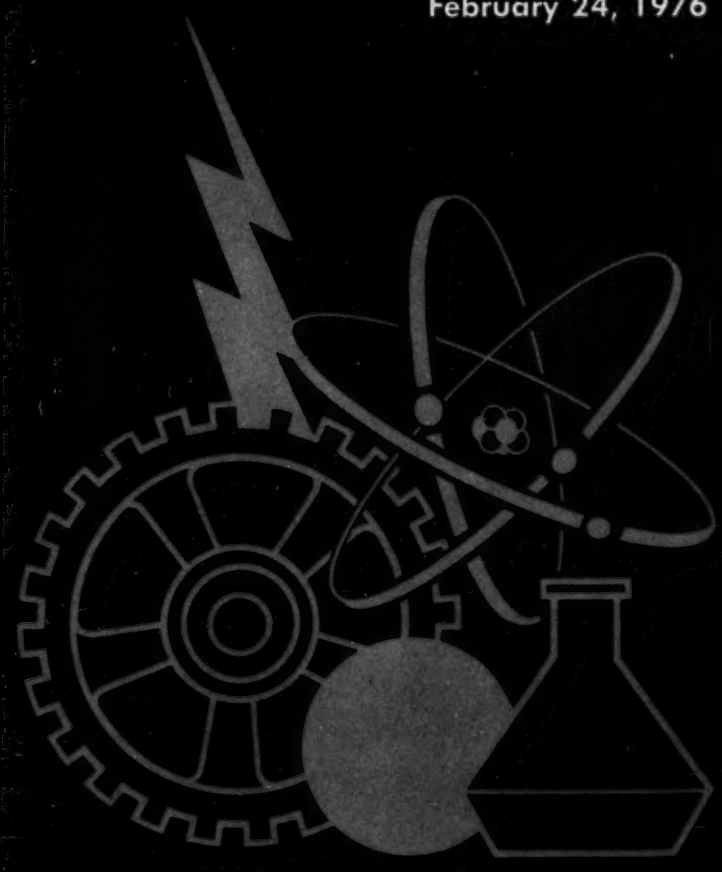
February 24, 1976



U.S.
DEPARTMENT
OF COMMERCE

Patent
and
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PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

February 24, 1976 Volume 943 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

Applications Involved

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

Waiver of Confidentiality

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

Publication

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

Inspection of Files

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

Filing of Protests

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examining group for consideration.

Consideration of Protest

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Di-

rector will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

Response by the Applicant to Subsequent Office Actions

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

Comment on Applicant's Response by the Protester

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

Conclusion of Prosecution

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Sept. 16, 1975.

[938 O.G. 945]

PATENT NOTICES

Certificates of Correction for the Week of Feb. 24, 1975

Re. 28,395	3,889,162	3,907,717	3,916,824
D. 236,964	3,890,805	3,907,774	3,917,069
D. 236,977	3,891,461	3,907,785	3,917,122
3,234,019	3,891,718	3,908,163	3,917,398
3,391,209	3,891,765	3,908,321	3,917,492
3,634,062	3,892,103	3,908,827	3,917,572
3,689,254	3,893,381	3,909,266	3,917,737
3,719,728	3,894,053	3,909,333	3,918,161
3,755,446	3,894,630	3,909,389	3,918,226
3,759,133	3,895,113	3,909,469	3,918,394
3,768,034	3,895,213	3,909,484	3,918,517
3,791,157	3,895,484	3,909,515	3,918,870
3,795,471	3,895,947	3,909,559	3,919,084
3,807,368	3,895,966	3,909,565	3,919,362
3,809,363	3,896,387	3,909,590	3,919,452
3,811,047	3,896,722	3,910,921	3,919,531
3,819,733	3,896,867	3,911,007	3,919,608
3,839,356	3,897,264	3,911,347	3,919,859
3,845,420	3,897,291	3,911,350	3,919,954
3,849,299	3,897,377	3,911,676	3,919,982
3,854,075	3,897,979	3,911,921	3,920,073
3,855,448	3,898,647	3,912,343	3,920,203
3,856,649	3,899,285	3,912,425	3,920,238
3,856,895	3,900,096	3,912,619	3,920,242
3,859,341	3,900,404	3,913,061	3,920,428
3,859,390	3,901,270	3,913,180	3,920,730
3,861,809	3,901,334	3,913,347	3,920,742
3,864,303	3,901,754	3,913,761	3,920,787
3,864,678	3,901,948	3,913,854	3,920,811
3,867,216	3,902,333	3,914,223	3,920,943
3,871,847	3,902,387	3,914,447	3,920,975
3,872,836	3,902,687	3,914,510	3,920,996
3,873,551	3,902,844	3,914,544	3,921,016
3,873,600	3,903,060	3,914,641	3,921,124
3,873,957	3,903,292	3,914,709	3,921,145
3,876,470	3,903,508	3,914,751	3,921,225
3,876,725	3,904,533	3,914,959	3,921,589
3,877,966	3,904,746	3,914,987	3,921,729
3,878,292	3,904,826	3,915,017	3,921,913
3,879,546	3,904,872	3,915,021	3,921,961
3,880,067	3,904,894	3,915,093	3,921,973
3,880,661	3,905,275	3,915,218	3,922,022
3,880,803	3,905,340	3,915,390	3,922,252
3,881,016	3,905,341	3,915,508	3,922,423
3,883,241	3,905,800	3,915,552	3,922,432
3,886,484	3,905,958	3,915,708	3,922,570
3,887,535	3,905,972	3,915,975	3,922,683
3,888,549	3,906,063	3,915,994	3,923,013
3,888,714	3,907,186	3,916,254	3,923,077
3,888,844	3,907,615	3,916,780	3,934,741

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patents are available from the Commissioner of Patents, Washington, D.C. 20231, at $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161, at the prices cited. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent Office. Claims and other technical data can usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Room W513, 401 M St. SW., Washington, D.C.

Patent application 507,515. Dry Sorbent Process for the Simultaneous Removal of Sulfur and Nitrogen Oxides. Filed Sept. 19, 1974. PC $3.50/MF $2.25.

Patent application 552,836. Control System for a Fluidized Bed Boiler Power Plant. Filed Feb. 25, 1975. PC $3.50/MF $2.25.

Patent application 553,199. Activation of Calcium Oxide as a Sorbent in High Temperature SO2 Removal Processes. Filed Feb. 26, 1975. PC $3.50/MF $2.25.

Patent 3,897,739. Fluid Bed Combustor for Operation at Ash Fusing Temperatures. Filed Oct. 30, 1974. Patented Aug. 5, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent application 611,931. Self Cleaning Solids Transferring Fluidized Bed Gas Distributor. Filed Sept. 10, 1975. PC $3.50/MF $2.25.

Patent application 611,952. Water Lubricated Bearing Assembly for Mining Machine. Filed Sept. 10, 1975. PC $3.50/MF $2.25.

Patent application 615,252. Semipermeable Membranes and the Method for the Preparation Thereof. Filed Sept. 22, 1975. PC $3.50/MF $2.25.

Patent 3,829,309. Process for Smelting Ilmenite to Produce Pig Iron and Titania-Containing Slag. Filed June 6, 1972. Patented Aug. 13, 1974. Not available NTIS.

Patent 3,840,354. Three-Stage Gasification of Coal. Filed Mar. 23, 1972. Patented Oct. 8, 1974. Not available NTIS.

Patent 3,840,456. Production of Low-Sulfur Fuel From Sulfur-Bearing Coals and Oils. Filed July 20, 1972. Patented Oct. 8, 1974. Not available NTIS.

Patent 3,842,806. Predator Protection Collar for Livestock. Filed Oct. 24, 1973. Patented Oct. 22, 1974. Not available NTIS.

Patent 3,843,540. Production of Magnetic Fluids by Peptization Techniques. Filed July 26, 1972. Patented Oct. 22, 1974. Not available NTIS.

Patent 3,844,733. Two-Stage Downflow Gasification of Coal. Filed Mar. 23, 1972. Patented Oct. 29, 1974. Not available NTIS.

Patent 3,857,767. Recovery of Copper From Chalcopyrite Ore Concentrates. Filed June 7, 1974. Patented Dec. 31, 1974. Not available NTIS.

Patent 3,862,292. Recovery of Rhenium. Filed Aug. 24, 1973. Patented Jan. 21, 1975. Not available NTIS.

Patent 3,862,313. Vibrio Vaccine and Immunization. Filed Jan. 17, 1974. Patented Jan. 21, 1975. Not available NTIS.

Patent 3,868,509. Method of Stabilizing Single Channel Analyzers. Filed Dec. 5, 1973. Patented Feb. 25, 1975. Not available NTIS.

Patent 3,871,906. Process for Making Particulate Self-Destructing Pesticidal Compositions. Filed Oct. 11, 1973. Patented Mar. 18, 1975. Not available NTIS.

Patent 3,873,307. Process for the Preparation of Yttrium-Silicon Compounds or Master Alloys by Silicon Carbide Reduction of Yttria. Filed Nov. 5, 1973. Patented Mar. 25, 1975. Not available NTIS.

Patent 3,875,777. Reduction of Copper-Caused Surface Cracking of Steel During Hot-Working. Filed July 11, 1973. Patented Apr. 8, 1975. Not available NTIS.

Patent 3,881,478. Hard Hat Air Curtain. Filed June 13, 1974. Patented May 6, 1975. Not available NTIS.

Patent 3,890,007. Chemical Mining of Copper Porphyry Ores. Filed Feb. 7, 1974. Patented June 17, 1975. Not available NTIS.

Patent 3,891,430. Recovery of Lead. Filed June 25, 1973. Patented June 24, 1975. Not available NTIS.

Patent 3,902,973. Electrolytic Preparation of Lanthanide and Actinide Hexaborides Using a Molten, Cryolite-Base Electrolyte. Filed Oct. 4, 1973. Patented Sept. 2, 1975. Not available NTIS.

Patent 3,904,386. Combined Shift and Methanation Reaction Process for the Gasification of Carbonaceous Materials. Filed Oct. 26, 1973. Patented Sept. 9, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington, Va. 22217

Patent 3,818,802. Speed Control Mechanism. Filed Apr. 27, 1972. Patented June 25, 1974. Not available NTIS.

Patent 3,818,958. Self-Locking Holdback Cleat. Filed July 19, 1973. Patented June 25, 1974. Not available NTIS.

Patent 3,819,925. Chemiluminescent Device. Filed Mar. 12, 1973. Patented June 25, 1974. Not available NTIS.

Patent 3,820,391. Deep Sea Pressure Gauge. Filed Apr. 12. 1973. Patented June 28, 1974. Not available NTIS.

Patent 3,821,120. Process for Promoting an Oxide for Use in a Pyrotechnic Composition. Filed Aug. 21, 1972. Patented June 28, 1974. Not available NTIS.

Patent 3,821,563. Asynchronous Band-Pass Pulse Width Filter. Filed June 18, 1973. Patented June 28, 1974. Not available NTIS.

Patent 3,821,648. Automatic Noise Figure Indicator. Filed May 29, 1973. Patented June 28, 1974. Not available NTIS.

Patent 3,821,669. Fixed Frequency Solid Dielectric Fused Quartz Cavity. Filed Oct. 24, 1950. Patented June 28, 1974. Not available NTIS.

Patent 3,821,736. Frequency Diversity Pulse Doppler Radar. Filed Oct. 5, 1962. Patented June 28, 1974. Not available NTIS.

Patent 3,824,548. Satellite Communications Link Monitor. Filed June 15, 1973. Patented July 16, 1974. Not available NTIS.

Patent 3,824,562. High Speed Random Access Memory Shift Register. Filed Mar. 30, 1973. Patented July 16, 1974. Not available NTIS.

Patent 3,824,588. Analog to Digital Converter Having Digital Offset Correction. Filed Feb. 9, 1973. Patented July 16, 1974. Not available NTIS.

Patent 3,831,436. Multi-Purpose Real-Time Holographic Polariscope. Filed Feb. 23, 1973. Patented Aug. 27, 1974. Not available NTIS.

Patent 3,831,546. Portable Swimmer Propulsion Unit. Filed Mar. 24, 1972. Patented Aug. 27, 1974. Not available NTIS.

Patent 3,831,594. Life Support Systems. Filed Mar. 5, 1973. Patented Aug. 27, 1974. Not available NTIS.

Patent 3,831,858. Vented Plunger Atomizer. Filed Mar. 1, 1973. Patented Aug. 27, 1974. Not available NTIS.

Patent 3,832,139. Linear Gradient Generator. Filed June 15, 1973. Patented Aug. 27, 1974. Not available NTIS.

Patent 3,835,271. Environmental Fluidic Switching Device With Plural Diaphragms. Filed Aug. 20, 1973. Patented Sept. 10, 1974. Not available NTIS.

Patent 3,838,658. Steady Heat Generating Reactor. Filed Apr. 17, 1973. Patented Oct. 1, 1974. Not available NTIS.

Patent 3,848,514. Fluidically Controlled Pneumatic to Mechanical Converters. Filed Feb. 21, 1973. Patented Nov. 19, 1974. Not available NTIS.

Patent 3,849,450. Bis(Trifluoromethyl)Epoxides. Filed Dec. 11, 1973. Patented Nov. 19, 1974. Not available NTIS.

Patent 3,849,742. Synchronously Tuned Laser Transmitter and Receiver. Filed June 28, 1973. Patented Nov. 19, 1974. Not available NTIS.

Patent 3,849,777. Interrogator-Transponder Fruit Reducer. Filed Oct. 26, 1973. Patented Nov. 19, 1974. Not available NTIS.

Patent 3,849,996. Method and Apparatus for Positioning a Cofferdam. Filed Jan. 2, 1974. Patented Nov. 26, 1974. Not available NTIS.

Patent 3,852,222. Fluorinated Epoxy Resins. Filed June 25, 1973. Patented Dec. 3, 1974. Not available NTIS.

Patent 3,852,756. Electrically Small Resonant Antenna With Capacitively Coupled Load. Filed Feb. 15, 1974. Patented Dec. 3, 1974. Not available NTIS.

Patent 3,852,766. Polypole Broadband Antenna Array. Filed Dec. 10, 1973. Patented Dec. 3, 1974. Not available NTIS.

Patent 3,853,345. Suction Gripping Device. Filed Nov. 30, 1973. Patented Dec. 10, 1974. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—Code GP-2, Washington, D.C. 20456

Patent application 604,374. Rechargeable Battery Which Combats Shape Change of the Zinc Anode. Filed Aug. 13, 1975. PC $3.50/MF $2.25.

Patent application 617,202. Lightweight Reflector Assembly and Method. Filed Sept. 24, 1975. PC $4.00/MF $2.25.

Patent 3,903,699. Solar Energy Power System. Patented Sept. 9, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts., Washington, D.C. 20240

Patent 3,825,670. Connector for Use in Capacitive Graded Splices. Filed Nov. 7, 1973. Patented July 23, 1974. Not available NTIS.

Patent 3,829,856. Paging Visual Signal. Filed Oct. 11, 1973. Patented Aug. 13, 1974. Not available NTIS.

Patent 3,838,716. System for Packing Particulate Material Into Long Cylindrical Containers. Filed July 24, 1973. Patented Oct. 1, 1974. Not available NTIS.

Patent 3,854,936. Smelting of Nickel Oxide Ores to Produce Ferronickel. Filed Sept. 26, 1973. Patented Dec. 17, 1974. Not available NTIS.

Patent 3,857,701. Smelting of Copper Oxides to Produce Blister Copper. Filed Sept. 26, 1973. Patented Dec. 31, 1974. Not available NTIS.

Patent 3,859,080. Corrosion Resistant Alloys. Filed Dec. 6, 1971. Patented Jan. 7, 1975. Not available NTIS.

Patent 3,859,520. Optical Detection System. Filed Jan. 17, 1974. Patented Jan. 7, 1975. Not available NTIS.

Patent 3,868,509. Method of Stabilizing Single Channel Analyzers. Filed Dec. 5, 1973. Patented Feb. 25, 1975. Not available NTIS.

Patent 3,886,662. Single Lever Controlled Geometric Writing Instrument. Filed June 21, 1974. Patented June 3, 1975. Not available NTIS.

Patent 3,888,703. Method of Producing Creep Resistance of Pb-Sb Alloys. Filed May 22, 1974. Patented June 10, 1975. Not available NTIS.

Patent 3,892,076. Long Shield Mining Method. Filed Apr. 1, 1974. Patented July 1, 1975. Not available NTIS.

Patent 3,902,865. Fe-Cu Duplex Metal Filaments. Filed Sept. 25, 1974. Patented Sept. 2, 1975. Not available NTIS.

Patent 3,908,977. Ultrahigh Vacuum Mounting Fixture. Filed Apr. 3, 1974. Patented Sept. 30, 1975. Not available NTIS.

Patent 3,909,251. Prevention of Surface Cracking Due to Formation of Copper Alloys of Tin and Antimony During Reheating of Steel. Filed Dec. 5, 1974. Patented Sept. 39, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research Code 302, Arlington, Va. 22217

Patent 3,812,456. A Hydro-Acoustic Filter. Filed Apr. 20, 1956. Patented May 21, 1974. Not available NTIS.

Patent 3,812,493. Bistatic Passive Radar. Filed Nov. 23, 1970. Patented May 21, 1974. Not available NTIS.

Patent 3,813,534. Chemical Lighting Device Having Interlocking Ampoules. Filed Sept. 14, 1973. Patented May 28, 1974. Not available NTIS.

Patent 3,813,671. System for Measuring Range to an Electromagnetic Radiation Source. Filed Jan. 16, 1968. Patented May 28, 1974. Not available NTIS.

Patent 3,818,802. Speed Control Mechanism. Filed Apr. 27, 1972. Patented June 25, 1974. Not available NTIS.

Patent 3,818,958. Self-Locking Holdback Cleat. Filed July 19, 1973. Patented June 25, 1974. Not available NTIS.

Patent 3,824,823. Fuel Filter Testing Apparatus. Filed Feb. 1, 1973. Patented July 23, 1974. Not available NTIS.

Patent 3,825,320. High-Pressure Optical Bulkhead Penetrator. Filed Mar. 2, 1973. Patented July 23, 1974. Not available NTIS.

Patent 3,831,436. Multi-Purpose Real-Time Holographic Polariscope. Filed Feb. 23, 1973. Patented Aug. 27, 1974. Not available NTIS.

Patent 3,831,546. Portable Swimmer Propulsion Unit. Filed Mar. 24, 1972. Patented Aug. 27, 1974. Not available NTIS.

Patent 3,831,858. Vented Plunger Atomizer. Filed Mar. 1, 1973. Patented Aug. 27, 1974. Not available NTIS.

Patent 3,831,879. Wire Dispenser. Filed Mar. 11, 1970. Patented Aug. 27, 1974. Not available NTIS.

Patent 3,838,305. Replaceable Electrode Surfaces for High Field Electrostatic Lenses. Filed Aug. 24, 1973. Patented Sept. 24, 1974. Not available NTIS.

Patent 3,842,274. Photoconductively Activated Gated. Infrared Charge Coupled Imaging Device (PAGIRCCD). Filed Nov. 15, 1973. Patented Oct. 15, 1974. Not available NTIS.

Patent 3,845,634. Dual Hydro Winch Lift Mechanism. Filed Nov. 2, 1973. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,846,048. Free Piston Pump. Filed Nov. 26, 1973. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,846,764. Technique for Information Storage Using Anisotropic Color Centers in Alkali Halide Crystals. Filed May 18, 1973. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,847,348. Roll Computer. Filed Nov. 14, 1973. Patented Nov. 12, 1974. Not available NTIS.

Patent 3,849,742. Synchronously Tuned Laser Transmitter and Receiver. Filed June 28, 1973. Patented Nov. 19, 1974. Not available NTIS.

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Patent 3,850,978. Synthesis of N,N-BIS(2-Fluoro-2,2-Dinitroethyl) Carbamates. Filed Nov. 28, 1973. Patented Nov. 26, 1974. Not available NTIS.

Patent 3,851,195. Boundary Layer Control as a Means of Increasing Power Output of Supersonic MHD Generators. Filed Aug. 29, 1973. Patented Nov. 26, 1974. Not available NTIS.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA Code GP–2, Washington, D.C. 20546

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Patent application 613,845. An Improved Load Handling Device. Filed Sept. 16, 1975. PC $3.50/MF $2.25.

Patent application 614,990. A Process for Forming a Crystalline Film. Filed Sept. 19, 1975. PC $3.50/MF $2.25.

Patent application 616,472. Sun Direction Detection System. Filed Sept. 24, 1975. PC $3.50/MF $2.25.

Patent application 617,202. Lightweight Reflector Assembly and Method. Filed Sept. 24, 1975. PC $4.00/MF $2.25.

Patent application 617,612. Thermistor Holder for Skin Temperature Measurements. Filed Sept. 29, 1975. PC $3.50/MF $2.25.

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Patent 3,906,954. Ophthalmic Liquifaction Pump. Patented Sept. 23, 1975. Not available NTIS.

Patent 3,907,312. System for Enhancing Tool-Exchange Capabilities of a Portable Wrench. Patented Sept. 23, 1975. Not available NTIS.

Patent 3,907,646. Measurement of Gas Production of Microorganisms. Patented Sept. 23, 1975. Not available NTIS.

Patent 3,907,686. Filter Regeneration Systems. Patented Sept. 23, 1975. Not available NTIS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 31, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-19-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-3-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-5-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-5-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-23-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-17-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-1-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-1-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	9-23-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-14-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	4-15-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-28-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures: Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-7-75

Expiration of patents: The patents within the range of numbers indicated below expire during February 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,871,479 to 2,875,444 inclusive
Plant Patents..... Numbers 1,905 to 1,813 inclusive

PATENT APPLICATIONS

PUBLISHED FEBRUARY 24, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before April 13, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

GENERAL AND MECHANICAL APPLICATIONS

B 398,488

PIPE RESTRAINTS FOR NUCLEAR POWER PLANTS

Robert E. Keever, 318-B Casa Loma Road, Morgan Hill, Calif. 95037; Randolph Broman, 444 Saratoga Ave., No. 131, Santa Clara, Calif. 95050, and Serge Shevekov, 965 Greenwick Ave., Sunnyvale, Calif. 94087

Filed Sept. 18, 1973, Ser. No. 398,488
Int. Cl.[2] F16L *3/12*
U.S. Cl. 248—49 **1 Claim**

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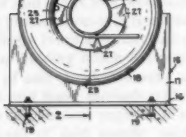

1. A restraint for a pipe comprising:

a. a rigid arcuate restrainer overlying a pipe, said arcuate restrainer being in the form of a toroid with an inner wall and an outer wall, said inner wall thereof being arranged to surround the pipe;

b. means on said restrainer for controlling the displacement of the pipe;

c. a supporting member fixed to a supporting surface for supporting said restrainer; and

d. a plurality of additional toroidal restraints, each having outer and inner walls, each successive one of said additional restrainers being of progressively decreasing cross-sectional area, each progressively smaller restrainer being disposed concentrically within the preceding restrainer between the outer and inner walls thereof, and said plurality of additional toroidal restrainers being disposed concentrically within said arcuate restrainer between the inner wall and the outer wall thereof to stiffen said arcuate restrainer.

B 411,765

APPARATUS FOR FASTENING A CORRUGATED SHEET TO A FLAT SHEET

Peter Gumm, Frankfurt am Main; Karl-Heinz Krussig, Hattersheim; Jörg Lohmann, Dortmund, and Josef Zimmermann, Niederhofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 245,347, April 19, 1972, Pat. No. 3,798,299. This application Nov. 1, 1973, Ser. No. 411,765
Claims priority, application Germany, Apr. 21, 1971, 2119321
Int. Cl.[2] B29C *27/12, 27/14*
U.S. Cl. 425—521 **11 Claims**

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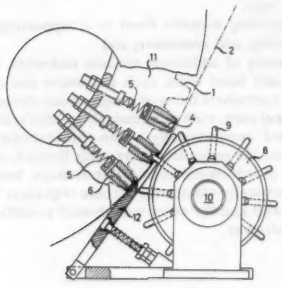
3,771,216	11/1973	Johnson	113/116 FF

1. A device for use in manufacturing a structure consisting of interconnected corrugated and flat sheets of thermoplastic film, wherein said corrugated sheet is secured to the flat sheet along the corrugation crests on one side of the corrugated sheet; said device comprising first and second spaced mold elements positioned to receive the corrugated and flat sheets therebetween; said first mold element having a plurality of recessed female mold members adapted to be received between the corrugations of the corrugated sheet and said second mold element having a plurality of elongated male plugs projecting therefrom and means for inserting the plugs into the recesses of the female mold elements to form mating projections in the flat and corrugated sheets and for removing the plugs from said recesses and projections; said female mold elements including punch means movably mounted in the

recesses thereof and means for sequentially urging said punch means against said projections upon removal of said plugs therefrom and for compressing the projections against said sheets thereby to form undercuts interconnecting the sheets.

10. A device for the manufacture of a structure consisting of operably interconnected corrugated and flat sheets formed of thermoplastic film material positioned in superimposed relation to each other with portions of the corrugated sheets in contact with the flat sheet, said device comprising means for simultaneously forming mating projections in said sheets in the areas of contact therebetween, and means for thereafter compressing said projections against said sheets to form undercuts therein, thereby connecting the sheets; and wherein



said forming means comprises recessed female mold members adapted to be received between the corrugations of said corrugated sheets, an opposed male member, and means for inserting the male member into the recesses of the female mold members through said sheets at the areas of contact therebetween to form mating projections in the flat and corrugated sheets and for removing the male members therefrom; said female mold members including punch means movably mounted in the recesses thereof and means for sequentially urging said punch means against said projections upon removal of said male member therefrom and for compressing the projections against said sheets thereby to form undercuts interconnecting the sheets.

B 436,724

ELEVATOR CABLE OSCILLATION-ABSORBING DEVICE

Masayuki Shigeta, Katsuta; Tadashi Shibata, Naka, and Toshihiko Nara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1974, Ser. No. 436,724

Claims priority, application Japan, Jan. 29, 1973, 48-110541

Int. Cl.[2] B66B 7/06

U.S. Cl. 187—1 R **12 Claims**

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1. Apparatus comprising:

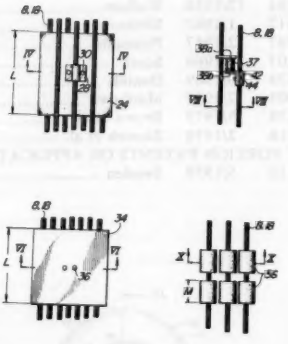
a first load member,

a second load member spaced from said first member,

a plurality of flexible line members extending in side by side relationship to one another from said first load member to said second load member with one end of each of said line members being attached to said first load member and the other opposite end of each of said line members being attached to said second load member,

moving means for moving said line members together with said first and second load members,

and oscillation-absorbing means for absorbing lateral oscillations of said line members, said absorbing means being connected to a first of said line members for movement both laterally and longitudinally with said first line member, said absorbing means being resiliently engageable with a second of said line members while permitting relatively free longitudinal movement of said second line member with respect to said absorbing means and said first line member, whereby absorption of lateral oscilla-



tions in said first and second line members by said absorbing means is obtained while permitting free relative longitudinal movement of said first and second line members to accommodate for different rates of longitudinal expansion and the like,

wherein said absorbing means includes a relatively flat sheet of resilient material disposed to have a plurality of said line members in lateral contact therewith at both opposite sides thereof with only said first line member attached thereto for both lateral and longitudinal movement therewith.

B 438,882

KNITTING NEEDLE

Hubert A. Rich, Westminster; James H. Fox, Torrance, and John W. Ryan, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 1, 1974, Ser. No. 438,882
Int. Cl.² D04B *35/02*
U.S. Cl. 66—116 3 Claims

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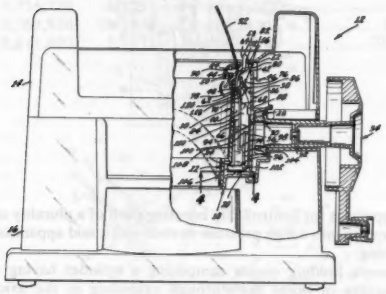

3. A knitting needle for depositing knitted loops on, and for removing them from, a loop-holding device, comprising:

an elongated shank having a front side, a rear side, an upper end and a lower end;

a hook formed at said upper end, said hook having an open side and a closed side, said closed side including a nose portion extending upwardly and outwardly away from said front side of said shank to a predetermined position;

an elongated web provided on said front side of said shank, said web including a ramp adjacent said open side of said hook and a loop-holding notch between said ramp and said lower end of said shank, whereby a knitted loop of yarn may leave said hook through said open side, move down said ramp and become engaged in said notch during upward movement of said needle, said predetermined position of said nose portion being slightly laterally outwardly beyond said loop-holding device, whereby said nose portion is adapted to move to the outer perimeter of said knitted loop to dislodge it from said loop-holding device when said needle starts a new stroke from its lowermost position after completing a preceding stroke wherein said notch carried said knitted loop to said loop-holding device; and

connecting means formed at said lower end of said shank for connecting said needle to a knitting machine for reciprocation thereby.

B 442,866

CAB MOUNTED REMOTE CONTROL APPARATUS

David W. Waldron, Valdosta, Ga., assignor to Lowndes Engineering Co., Inc., Valdosta, Ga.

Continuation of Ser. No. 216,395, Jan. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 20,364, March 17, 1970, Pat. No. 3,633,825. This application Feb. 15, 1974, Ser. No. 442,866
Int. Cl.² A01M *19/00*
U.S. Cl. 43—129 10 Claims

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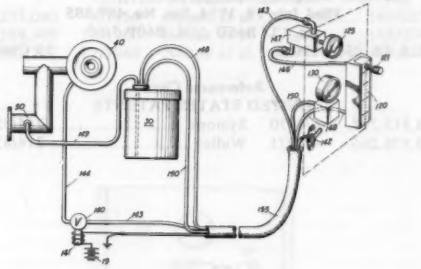

1. Apparatus for use in controlling a fog generator used in applying insecticides from a vehicle comprising in combination:

a. discharge head for use in developing a fog mixture of air and insecticide;

b. means for supplying insecticide under pressure to said discharge head including a supply tank;

c. means for supplying air pressure means to said discharge head; and,

d. control means operatively associated with said insecticide supply means for controlling the discharge of said insecticide under pressure, said control means including a flow meter having an adjustable flow rate control valve and thermometer means for sensing the temperature of insecticide flowing through said flow rate control valve and said flow meter, said flow meter and said thermometer means and said flow rate control valve being located in the vehicle operator's position and remote from said supply tank and from said discharge head, supply lines for said liquid including a first supply line in flow communication between said supply tank and said control means and a second supply line in flow communication between said control means and said discharge head, and transfer means for transferring liquid through said supply lines from said supply tank through said first supply line, through said flow meter, through said second supply line to said discharge head, said flow meter and said adjustable flow rate control valve being connected in series between said supply tank and said discharge head whereby flow of insecticide to said discharge head may be monitored and controlled in said vehicle operator's position in accord with temperature variations occuring in said insecticide, an electromagnetic valve in one of said supply lines operable between an insecticide off position

and an insecticide discharge position, and switch means in said vehicle operator's position for controlling said electromagnetic valve whereby a vehicle operator may not only control the associated vehicle but may also completely control discharge of said insecticide, said flow meter and said thermometer being disposed adjacent to each other for simultaneous observation by the operator, said valve being disposed for manipulation thereof by the operator as he observes said flow meter.

B 489,685

ADJUSTABLE FAIRLEAD ROLLER SYSTEM

Eugen J. Bexten, Ancaster, Canada, assignor to International Harvester Company, Chicago, Ill.

Filed July 18, 1974, Ser. No. 489,685
Int. Cl.² B66D *1/36*; B60P *3/00*
U.S. Cl. 254—190 R **11 Claims**

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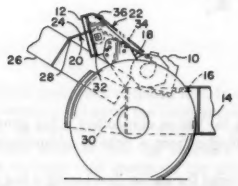

1. An adjustable fairlead roller system for a log skidder with a frame, a power source mounted on said frame, said system comprising:

a fairlead roller assembly having a plurality of apertures and capable of being rigidly connected to said frame, and capable of pivotal and walking vertical position adjustment;

a logging arch rigidly attached to said frame, and having a plurality of apertures capable of rigidly supporting and pivotally adjusting the vertical location of said fairlead roller assembly;

attaching means for adjustably connecting said fairlead roller assembly and said logging arch through said apertures; and

adjusting means connecting said power source and said fairlead roller assembly for having said power source provide the power necessary to pivotally vary the vertical position of said fairlead roller assembly.

B 490,547

HIGH PRESSURE SAMPLE INJECTOR AND INJECTION METHOD

Miner N. Munk, Walnut Creek, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed July 22, 1974, Ser. No. 490,547
Int. Cl.² G01N *1/10*
U.S. Cl. 73—422 GC **14 Claims**

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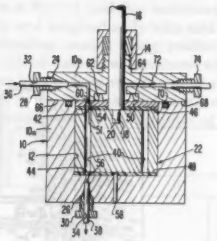


1. Apparatus for controlledly injecting each of a plurality of fluid samples into a high pressure environment, said apparatus comprising:

a. sample holding means comprising a cylinder having a plurality of bores therethrough extending in the axial direction of said cylinder, the axes of said bores being substantially equidistant from the axis of said cylinder, said bores defining a plurality of sample cells for holding the samples,

b. A pressure-tight vessel defining a chamber for containing said sample holding means, said sample holding means being movably mounted within said chamber,

c. means for maintaining said chamber at a pressure approximately equal to the pressure of the high pressure environment,

d. means for moving said sample holding means within said chamber so that each end of each of said bores is selectively connectable to an injection means for forcing the sample out of a bore so connected and into the high pressure environment,

e. said injection means comprising an inlet conduit connectable to a source of carrier fluid at a pressure at least equal to the pressure of the sample in said chamber, said inlet conduit being selectively connectable to a first end of each of said bores, and said injection means further comprising an outlet conduit extending between said chamber and said high pressure environment, said outlet conduit being selectively connectable to a second end of each of said bores, said inlet and outlet conduits being positioned in said chamber for successive simultaneous connection to said first and second ends of the same one of each of said bores as said sample holding means moves within said chamber,

f. a first gasket adjacent one end of said cylinder, and a second gasket adjacent the opposite end of said cylinder, each of said first and second gaskets being mounted at the axis of said cylinder for relative movement between said cylinder and said gaskets, each of said first and second

gaskets having an aperture, each of said gasket apertures being connected to a different one of said inlet and outlet conduits, the edge of each of said gasket apertures adjacent said cylinder defining a geometrical figure having a transverse dimension which is greater than the minimum spacing between adjacent ones of said bores through said cylinder, and

g. means for holding each of said first and second gaskets stationary with respect to said vessel.

B 490,647

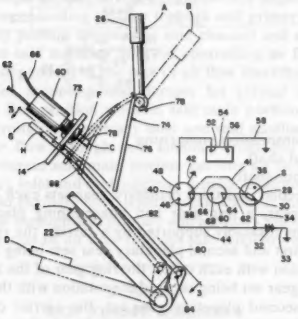
SINGLE SWITCH SAFETY START SYSTEM

Joseph P. Deschamps, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 22, 1974, Ser. No. 490,647
Int. Cl.² A01D *75/28;* **H01H** *3/14;* **B60K** *28/00*
U.S. Cl. 180—103 **5 Claims**

References Cited
UNITED STATES PATENTS

2,989,134	6/1961	Kamlukin et al.	180/1 F X
3,419,115	12/1968	Glenn	200/61.89 X
3,521,233	7/1970	Inoue	200/61.89 X
3,608,285	9/1971	Berk	56/10.2
3,731,471	5/1973	Bening	180/53 R
3,736,729	6/1973	Peterson	56/10.5
3,763,976	10/1973	Prokop et al.	192/3.63
3,811,020	5/1974	Johnson et al.	200/61.88



1. For use with a lawn and garden tractor having a mobile frame with steerable wheels and traction wheels, a power source having a starting circuit mounted on said frame, a main clutch means operably connecting said power source and said traction wheels capable of selectively engaging and disengaging said operable connection by rotation of a clutch pedal, a power implement operably connected to said mobile frame and said power source, an implement clutch means capable of selectively engaging and disengaging said implement driving connection by rotation of an implement clutch handle, a safety start system comprising, in combination:

an electrical switch means in series with said starting circuit for closing said starting circuit will be when said clutch pedal and said implement clutch handle are in the disengaged position, and for opening said starting circuit when at least one of said implement clutch handle and said clutch pedal is in the engaged position;

a resilient switch actuator means mounted on and responsive to the rotation of said implement clutch handle for having the disengaged position of said implement clutch handle cause said resilient contact means to close said electrical switch means and complete said starting circuit;

a rigid opening means slidably mounted on said tractor, pivotally attached to said clutch pedal and responsive to the rotation of said clutch pedal for having the engaged condition of said main clutch means cause said rigid opening means to open said starting circuit by changing the deflection point of said resilient switch actuator means.

B 492,120

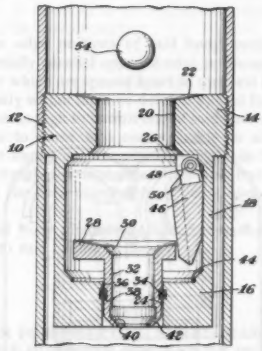
CONTINUOUS ORIFICE FILL DEVICE

Peter W. Seitz, Wichita Falls, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 26, 1974, Ser. No. 492,120
Int. Cl.² E21B *41/00*
U.S. Cl. 166—224 **6 Claims**

References Cited
UNITED STATES PATENTS

3,275,080	9/1966	Nelson et al.	166/225
3,289,769	12/1966	Nelson et al.	166/224
3,292,707	12/1966	Nelson et al.	166/224



1. A continuous orifice fill device comprising a disc-like cross member having edge coupling means for attaching it in a sealing relationship around the inner wall of a string of casing, said cross member having a top which is beveled towards the center of said cross member, an axial bore extending through said cross member, and a bottom part including a flapper valve assembly including a valve seat surrounding said axial bore and a hinged flapper valve, a second cross member, said second cross member being disposed below said first cross member and coupled and sealed with respect to said first cross member by tubular walls which are disposed within said string of casing, said second cross member having an axial bore extending therethrough, a movable metal valve seat member having an upper position and a lower position, said valve seat member having a tubular walled part having an upper end including an outwardly extending flanged part and an inwardly extending non-resilient pressure deformable valve seat including a valve seating surface at its lower end, said valve seat member having its walled part extending closely but slidably through said axial bore in said second cross member

whereby its outwardly extending flanged part retains said hinged flapper valve in an open position when said valve seat member is in its upper position, means for maintaining said valve seat member in its upper position until a predetermined pressure is reached on said pressure deformable valve seat, said axial bore of said first cross member and said tubular walled part of said valve seat member being dimensioned to permit a valve element to pass through and seal against said inwardly extending pressure deformable valve seat.

B 499,209

UNDERGROUND EXCAVATING MACHINE HAVING INDEPENDENTLY MOVABLE HALF-FRAMES

Michel Dubois, Ittre, Belgium, assignor to Linden-Alimak AB, Skelleftea, Sweden

Filed Aug. 21, 1974, Ser. No. 499,209

Claims priority, application Luxemburg, Aug. 22, 1973, 68283

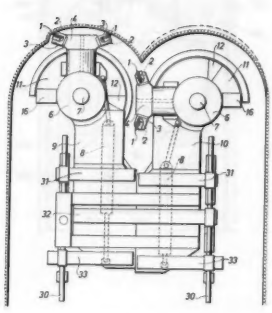
Int. Cl.² E21D 9/10

U.S. Cl. 299—31 **29 Claims**

References Cited

UNITED STATES PATENTS

2,452,632	11/1948	Cameron	180/8 D
3,106,825	10/1963	Barall et al.	299/31 X
3,512,597	5/1970	Baron	180/8 C
3,663,054	5/1972	Dubois	299/31



1. A machine for excavating an underground gallery, comprising a frame structure consisting essentially of two half-frames vertically arranged side by side, means for supporting each half-frame on the gallery floor independent of the other half-frame, two parallel vertical shafts respectively supported by said two half-frames, a separate turret pivotally supported around each of said shafts, each of said turrets having a cutting head which can rotate around a horizontal axis and which is equipped with tools for excavating, said two half-frames being movable horizontally in relation to one another, a control member connected between said half-frames for controlling said relative movement, the two half-frames being selectively and independently positionable on the gallery floor by said relative movement, one half-frame being movable while the other half-frame remains fixed in position.

B 500,945

TRANSMISSION INCLUDING DUAL INPUT CLUTCH ASSEMBLY

James Elmer Winzeler, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 27, 1974, Ser. No. 500,945

Int. Cl.² F16H 57/10; F16D 19/00

U.S. Cl. 74—765 **5 Claims**

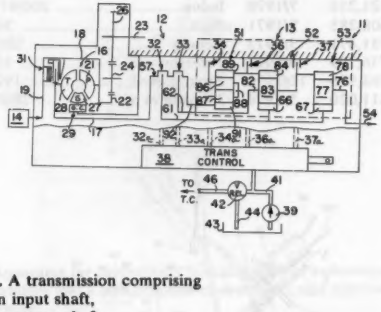
References Cited

UNITED STATES PATENTS

2,693,721	11/1954	Forster	74/759 X
3,318,174	5/1967	Clapp et al.	74/753
3,486,398	12/1969	Waclawek	74/759 X
3,575,067	4/1971	Herman	74/759
3,713,354	1/1973	Edmunds	74/753 X
3,733,928	5/1973	Vozumi et al.	74/753
3,820,418	6/1974	Ott	74/759

FOREIGN PATENTS OR APPLICATIONS

545,064	8/1957	Canada	74/765



1. A transmission comprising

an input shaft,

an output shaft,

first, second and third planetary gear sets each including a sun gear, a ring gear and intermeshing planetary gear means rotatably supported by a carrier, the ring gears of the first and second planetary gear sets being secured for rotation with each other, the ring gear of the third planetary gear set being secured for rotation with the carrier of the second planetary gear set, the carrier of the third planetary gear set being coupled with the output shaft, the input shaft being coupled with the sun gear of the first planetary gear set,

first and second intermediate shafts being arranged in concentric relation with the planetary gear sets, the first intermediate shaft being coupled with the sun gears of the second and third planetary gear sets, the second intermediate shaft being coupled with the carrier of the second planetary gear set and the ring gear of the third planetary gear set,

a first friction device comprising a clutch being selectively actuatable in order to couple the first intermediate shaft for rotation with the input shaft,

a second friction device comprising a clutch being selectively actuatable in order to couple the second intermediate shaft for rotation with the input shaft,

a third friction device comprising a brake being selectively actuatable for securing the carrier of the first planetary gear set against rotation,

a fourth friction device comprising a brake being selectively actuatable for securing the ring gears of the first and second planetary gear sets against rotation,

a fifth friction device comprising a brake being selectively actuatable for securing the ring gear of the third planetary gear set against rotation, and

means for selectively actuating each of the first, second, third, fourth and fifth friction devices.

B 502,652

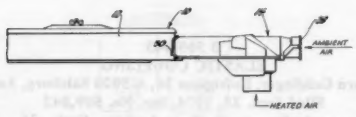
ENGINE INDUCTION AIR FLOW CONTROL

John D. McMichael, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 3, 1974, Ser. No. 502,652
Int. Cl.² G05D *23/08*
U.S. Cl. 236—13 **4 Claims**

References Cited
UNITED STATES PATENTS

3,513,817	5/1970	Kearsley	123/122 D
3,744,715	7/1973	Maddocks	236/13
3,779,223	12/1973	Piech et al.	123/122 D
3,782,349	1/1974	Kamo et al.	236/101 C X



1. An internal combustion engine induction air flow control comprising means defining a generally horizontal air flow conduit having a primary air inlet and an air outlet at opposite ends thereof, an auxiliary air inlet below said air flow conduit, and a channel leading from said auxiliary air inlet upwardly to said conduit, a damper having a main portion disposed in said conduit for controlling air flow through said primary inlet and an auxiliary portion disposed in said channel and adapted to slide across said auxiliary inlet for controlling air flow therethrough independent of the rate of air flow therethrough, and pivot means mounting said damper for pivotal movement between a first position wherein said main portion obstructs air flow through said primary inlet and said auxiliary portion permits air flow through said auxiliary inlet and a second position wherein said main portion permits air flow through said primary inlet and said auxiliary portion obstructs air flow through said auxiliary inlet, whereby said damper may proportion air flow through said primary and auxiliary inlets independent of the rate of air flow through said auxiliary inlet.

B 502,667

MOP FRAME ASSEMBLY

James E. Thielen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 3, 1974, Ser. No. 502,667
Int. Cl.² A47L *13/254*
U.S. Cl. 15—147 A **5 Claims**

References Cited
UNITED STATES PATENTS

2,618,003	11/1952	Robey	15/176
2,632,192	3/1953	Mallory	15/119 A
2,840,839	7/1958	Benedetti	15/244 A
3,012,264	12/1961	Nash	15/144 A X
3,616,481	11/1971	Van Spronsen	15/244 R
3,778,860	12/1973	Thielen	15/147 A

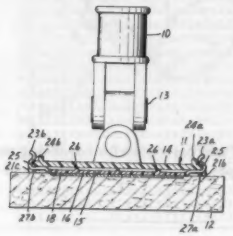
FOREIGN PATENTS OR APPLICATIONS

1343/31	5/1932	Australia	15/228

1. A mop frame assembly comprising:

a mop frame, a handle holder attached to said mop frame, said handle holder and mop frame being formed of materials that are resistant to normal cleaning solutions, and said mop frame comprising:

a rigid body member and a rigid base member removably engageable with said body member wherein said body member is formed with opposed parallel edge portions and having parallel depending flange portions along said edge portions, said flange portions being directed in the same direction and commencing on either side of an intermediate portion of each of said edge portions, the edge portions of said intermediate portions being slightly inset from and parallel to said parallel edge portions of said body member, said base member having (1) a pair of parallel upstanding opposed elongate S-shaped stiff but flexible engaging members positioned to engage said intermediate edge portions between the intermediate ends of said flange portions, the curved portion of said engaging members adjacent said base member being spaced apart a distance corresponding to the spacing



between edge portions of said body member (2) and substantially parallel opposed edge portions on said base member which are spaced apart so that said base member fits loosely within the area defined by said flange portions but close enough to permit one of said base member edge portions to come into contact with an adjacent body member flange portion when the opposite S-shaped engaging member is disengaged from said body member to prevent the base member from being completely disengaged,

one of said body member or said base member being attached to said handle holder.

B 503,436

APPARATUS FOR INSERTING SMALL-DIAMETER PIPE INTO LARGE-DIAMETER PIPE AND/OR PULLING THE FORMER OUT OF THE LATTER

Toshiyuki Sato, Takatsuki, Japan, assignor to Kabushiki Kaisha Suiken, Osaka, Japan

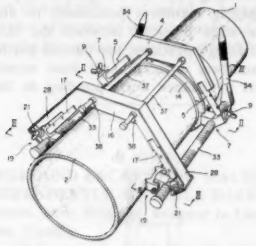
Filed Sept. 5, 1974, Ser. No. 503,436
Claims priority, application Japan, Sept. 7, 1973, 48-105446
Int. Cl.² B23P *19/04*
U.S. Cl. 29—237 **11 Claims**

References Cited
UNITED STATES PATENTS

889,315	6/1908	Kenyon	254/29 R
3,426,417	2/1969	Austin	29/237
3,653,115	4/1972	Perkins	29/237
3,710,427	1/1973	Doty	29/237

1. An apparatus for advancing pipes telescopically into and/or out of engagement comprising first and second frame means arranged to straddle axially aligned pipes, said first and second frame means further including free end portions provided with slidable means serving to accommodate the frames of said apparatus to pipes of varying diameters, lockable jaw means associated with each of said slidable means arranged to be brought into contact with the respective pipes, parallel

longitudinally disposed bar means associated with and extending through said lockable jaw means and actuator means



carried by each of said bar means for advancing and retracting said telescopic pipes into and out of contact and vice versa.

B 504,778

POSITIONALLY CONSTRAINING WEB SUPPORT

Thaddeus Swanke, Rochester, and Richard T. O'Marra, Churchville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 10, 1974, Ser. No. 504,778

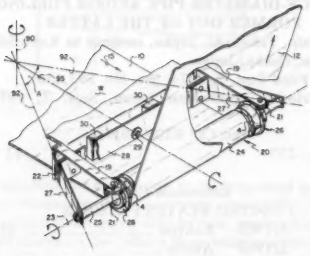
Int. Cl.² B65H *25/26*

U.S. Cl. 226—21 **9 Claims**

References Cited

UNITED STATES PATENTS

3,315,859	4/1967	Owen	226/21
3,507,437	4/1970	Lips	226/192 X
3,598,332	8/1971	Sharkey	226/196 X
3,658,227	4/1972	Stephens	226/196
3,753,517	8/1973	Takenaka	226/196 X



1. A web support mounted on a fixed frame for rotation in engagement with a moving web, the web defining an entering web portion relative to said web support and a closed path of movement, said web support comprising:

a. edge guide means mounted in a predetermined location in the path of movement, said edge guide means having opposed web engaging portions a fixed maximum distance apart which distance corresponds substantially to the width of the moving web for establishing at said edge guide means a fixed lateral spatial position of the web relative to the frame; and

b. means defining a web supporting surface at the predetermined location for rotating in tracking engagement with the moving web, said surface-defining means presenting negligible resistance to changes in the lateral angular position of the entering web portion;

said web support laterally constraining the entering web portion against change in its spatial position while permitting freedom of the entering web portion to change its angular position.

B 509,043

ELASTIC COUPLING

Leonhard Geislinger, Hofelgasse 26, A-5020 Salzburg, Austria

Filed Sept. 25, 1974, Ser. No. 509,043

Claims priority, application Austria, Sept. 25, 1973, 8254/73

Int. Cl.² F16D *3/14*

U.S. Cl. 64—27 L **6 Claims**

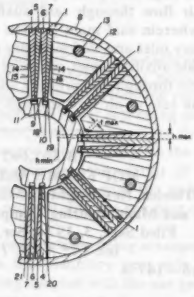
References Cited

UNITED STATES PATENTS

1,990,683	2/1935	Wood	64/27 L
2,029,516	2/1936	Tower	64/27 L
2,266,872	12/1941	Kuhns et al.	64/27 L
2,363,257	11/1944	Mitteucci	64/27 L
2,379,175	6/1945	Mulheim	24/27 L

FOREIGN PATENTS OR APPLICATIONS

1,206,219	12/1965	Germany	64/27 L



1. An elastic coupling for transmitting torque from a driving element rotating about an axis to a driven element and for damping torsional vibrations, the coupling comprising

1. a hub connected to one of the elements,
2. a clamping ring concentric with the hub,
   a. the hub and the clamping ring defining therebetween an annular damping chamber,
3. a damping fluid in the chamber, and
4. packets of flexible leaf springs arranged in the chamber and extending radially between the hub and the clamping ring, the clamping ring locking the leaf springs in position,
   a. each of the packets having outer leaf springs having a cross section transverse to the axis which tapers radially inwardly from an outer end to an inner end thereof, and
   b. the outer leaf springs being so dimensioned that their maximum flexure is at least equal to the difference between the thickness of the leaf springs at their outer ends and the thickness of the leaf springs at their inner ends.

B 509,238

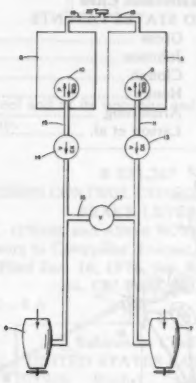
FUEL DEGASSING METHOD

Earl T. Rookey, Long Beach, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Sept. 25, 1974, Ser. No. 509,238
Int. Cl.² F01B 21/04, 25/00; F02C 9/04
U.S. Cl. 60—706 4 Claims

References Cited
UNITED STATES PATENTS

2,932,309	4/1960	Godden et al.	137/255 X
3,011,504	12/1961	Klank, Jr.	55/182 UX
3,635,604	1/1972	Petersen	417/435 X



1. A method of operating a fuel system in an aircraft equipped with two or more fuel tanks, each tank having a reversible fuel booster pump submerged therein and connected to an engine fuel supply line, said tanks being vented to atmosphere, and means to selectively reverse the rotation of said fuel booster pumps, said method comprising reversing the rotation of the fuel booster pump in the unused fuel tanks when all engine fuel is being supplied from one tank only, whereby the reversed fuel booster pump agitates the fuel in said unused tanks to release entrained air and vapor from said fuel to escape from said tank vents.

B 511,454

COLORCODE SPELLER

William Robert Farmer, 215 Campbell St., New Westminister, British Columbia, Canada (V3M-5K8)

Filed Oct. 2, 1974, Ser. No. 511,454
Int. Cl.² G09B 11/00
U.S. Cl. 35—36 7 Claims

References Cited
UNITED STATES PATENTS

165,126	6/1875	Shepherd	35/62
450,092	4/1891	Wyman	35/62
1,286,157	11/1918	Vizcarra	35/75
2,439,413	4/1948	Mitchell	35/2

1. A color coded speller comprising:

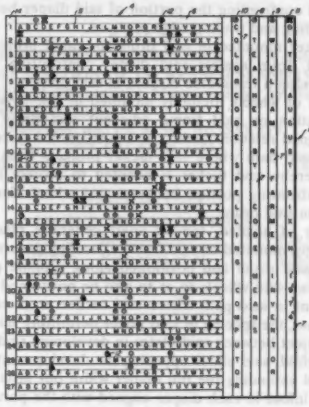
a surface;

a plurality of horizontally disposed lines of alphabet letters on said surface;

an equal plurality of horizontally disposed code marking lanes on said surface, each code marking lane disposed directly above a line of alphabet letters;

said horizontal code marking lanes adapted to removably receive code marks;

a plurality of vertically disposed word and sentence lanes on said surface adapted to removably receive alphabet letters whereby a teacher may place a code mark above a selected letter in some or all of said lines and a pupil may copy said selected letters in one of said vertically disposed lanes to spell words and sentences which were preselected by the teacher.



B 516,609

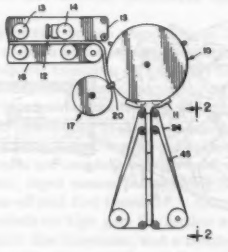
DIAPER FOLDING APPARATUS

Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 404,037, Oct. 5, 1973, Pat. No. 3,860,004, which is a continuation-in-part of Ser. Nos. 297,750, Oct. 16, 1972, abandoned, and Ser. No. 373,247, June 25, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,609
Int. Cl.² B65H 45/00
U.S. Cl. 270—62 5 Claims

References Cited
UNITED STATES PATENTS

2,114,124	4/1938	Horton	270/76
3,537,461	11/1970	Imbert	270/76



1. Apparatus for folding disposable diapers comprising a frame, means operably associated with said frame for advancing unfolded disposable diapers along a predetermined path whereby each diaper has leading and trailing edge portions.

a drum mounted on said frame in the path of diaper advancement, said frame being equipped with means for rotating said drum about its axis and with further means

for applying suction to circumferentially spaced apart areas of the periphery of said drum for holding said leading and trailing edge portions of the diaper against the drum, said drum having an opening in the periphery thereof between said circumferentially spaced apart areas and confronting the portion of said diaper between said leading and trailing edge portions,

a tucker mounted in said drum for rapid projection from said drum against said diaper confronting portion to develop a transverse outfold in said diaper,

a pair of wheels rotatably mounted in side-by-side spaced relation on said frame adjacent said drum in axially aligned relation thereto and positioned adjacent a point in said path where said tucker projects from said drum whereby said tucker is adapted to project said diaper confronting portion between said wheels for takeaway from said drum,

a pair of aligned, spaced apart generally planar folding plates mounted on said frame extending generally radially of said drum and positioned along a plane passing between said wheels so as to also be positioned adjacent a point in said path where said tucker projects from said drum, the spacing of said plates permitting said tucker to project between said plates in developing said transverse outfold, said plates opposing the development of an outfold extending the full diaper width but instead forming an infold in each diaper aligned with the partially developed outfold and on each side thereof, each plate being equipped with an inwardly directed air jet, and

a belt system for gripping a diaper to move the same generally radially away from said drum while said diaper infolds are passing over said plates.

B 521,793

TREE FELLING APPARATUS

Lars Öjvind Bruun, Filipstad, Sweden, assignor to Bruun System AB, Filipstad, Sweden

Filed Nov. 7, 1974, Ser. No. 521,793

Claims priority, application Sweden, Nov. 15, 1973, 7315516

Int. Cl.² A01G *23/08*

U.S. Cl. 144—34 R **6 Claims**

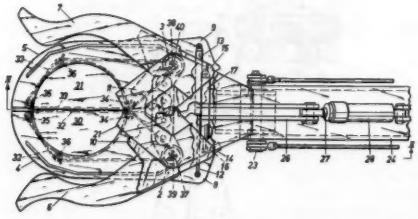
References Cited

UNITED STATES PATENTS

3,527,272	9/1970	Hamilton	144/3 D
3,640,322	2/1972	Allen	144/3 D X
3,854,510	12/1974	Matlik	144/34 R

FOREIGN PATENTS OR APPLICATIONS

330,602	11/1970	Sweden	144/309 AC



1. An improved tree felling apparatus comprising two saw supports on a supporting member and arranged for swinging motion towards and away from one another, one guide bar on each saw support, a continuous saw chain supported on each guide bar so as to run around it in the horizontal plane of said bar, and at least one pair of gripping arms pivotally mounted in the apparatus (at a higher level) and adapted to grip a tree trunk, said two saw chains arranged to be driven in synchrony, while said saw supports approach one another, to cut said tree trunk, the improvement comprising single means incorporated in said apparatus to mechanically control the movement of each of said saw supports as well as those of said gripping arms relative to an imaginary vertical longitudinal medium plane through said apparatus.

B 525,809

HAND AND FOOT GOVERNOR CONTROL SYSTEM

Richard A. Hale, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Nov. 21, 1974, Ser. No. 525,809

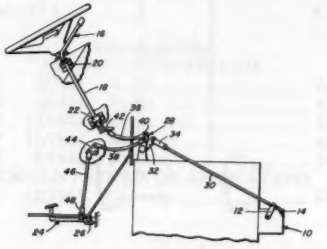
Int. Cl.² G05G *1/00, 1/14*

U.S. Cl. 74—482 **8 Claims**

References Cited

UNITED STATES PATENTS

1,308,707	7/1919	Gross	74/482
1,364,113	1/1921	Johnson	74/482 X
1,398,625	11/1921	Clough	74/482
1,549,719	8/1925	Henke	74/482
2,185,170	1/1940	Armstrong	74/481
3,535,951	10/1970	Larson et al.	74/482



1. Control apparatus for a power control unit of a prime mover, said apparatus comprising first and second throttles, and first and second linkage means respectively extending from the first and second throttles to the power control unit for a selective actuation thereof, each of said linkage means including at least one link capable of transmitting only tension for a tension actuation of the control unit by either throttle independently of the other throttle.

B 529,659

INTREGRAL HYDRAULIC PUMP AND WHEEL STEERING MECHANISM FOR SAILBOATS

Martens Isenberg, Jr., 23 Cypress Ave., Glen Head, N.Y. 11545

Filed Dec. 4, 1974, Ser. No. 529,659

Int. Cl.² B63H *25/00*; B63B *41/00*

U.S. Cl. 114—144 R **10 Claims**

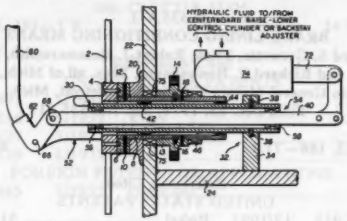
References Cited

UNITED STATES PATENTS

667,158	1/1901	Webster	114/138
1,101,692	6/1914	Goodspeed	180/77 R
1,799,257	4/1931	Schauman	114/210
2,121,894	6/1938	Torjussen	114/144 R
3,620,182	11/1971	Russell	114/109

1. In a steering assembly for navigating a boat having a vertically movable centerboard movable by a hydraulic means including a hydraulic pump whereby to raise or lower said centerboard, said boat having a steering wheel connected to a hollow steering wheel shaft which shaft in turn is connected to a steering sprocket, the improvement for simultaneously raising or lowering the centerboard which comprises a hydrau-

lic pump shaft disposed through said steering wheel shaft, said hydraulic pump shaft connected to an actuating means at said steering wheel and at its opposite end connected to said hydraulic pump.



B 531,267

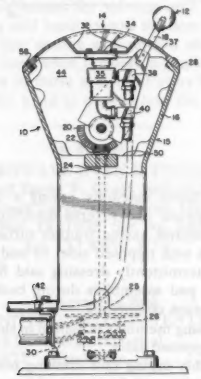
TRANSMISSION CONTROL CONSOLE WITH RECESSED BRAKE LEVER

Frederick C. O'Neill, and Alfred W. Sieving, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 10, 1974, Ser. No. 531,267
Int. Cl.² B60K *29/02*
U.S. Cl. 192—4 A **6 Claims**

References Cited
UNITED STATES PATENTS

2,039,553	5/1936	Roehrl	192/4 A
3,410,151	11/1968	Adams et al.	74/483
3,626,780	12/1971	Lowder et al.	74/491
3,858,695	1/1975	Whisler	192/4 A



1. A console attachable to a vehicle to control a transmission thereof; comprising:

an enclosure;

a plate forming the top of said enclosure, said plate including an indentation forming a trough therein and including a channel through said plate in an upraised portion thereof adjacent said trough;

a gearshift regulator extending through said channel, said regulator serving to control a transmission of a vehicle; and

a parking brake actuator recessed within said trough, said actuator serving to control a parking brake of said vehicle.

B 533,259

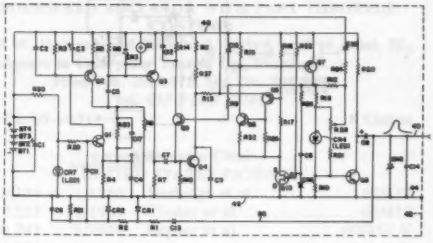
DEMAND CARDIAC PACEMAKER WITH INPUT CIRCUIT PORTION OF INCREASED SENSITIVITY

Clifton Alferness, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 16, 1974, Ser. No. 533,259
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 PG **6 Claims**

References Cited
UNITED STATES PATENTS

3,661,158	5/1972	Berkovits	128/419 PG
3,768,486	10/1973	Berkovits et al.	128/419 PG
3,832,703	8/1974	Lenert	307/318



1. A demand cardiac pacemaker circuit comprising:

a. pulse generator means including timing circuit means operable for generating and applying output stimulator pulses at a selected frequency to the heart of the patient in which said demand pacemaker circuit is implanted; and

b. sensing circuit means responsive to a heart signal not always above a predetermined amplitude and comprising a first bipolar transistor of relatively high gain, unidirectional conducting means coupled to its base for maintaining the bias level of the base of said transistor, said unidirectional conducting means comprising a semiconductor device having a junction whose temperature dependent coefficients are coextensive with those of said first bipolar transistor, input means for applying the heart signal to said base of said first transistor, a second bipolar transistor of relatively high gain for further amplifying the output of said first transistor, and a feedback circuit including filter circuit means for applying the output of said second transistor to said first transistor, said filter circuit means for shaping the feedback signal to provide desired amplitude/frequency response characteristics of said sensing circuit means, whereby said sensing circuit is responsive to input signals of an amplitude above a predetermined level for generating and applying inhibit signals to said pulse generator means.

B 534,574

INSTALLATION FOR THE PROCESSING OF EKG SIGNALS

Michael Maas, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Dec. 19, 1974, Ser. No. 534,574

Claims priority, application Germany, Dec. 22, 1973, 2364312

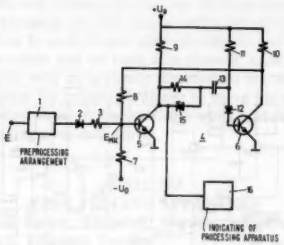
Int. Cl.[2] A61B 5/04

U.S. Cl. 128—2.06 R 2 Claims

References Cited

UNITED STATES PATENTS

3,554,188	11/1971	Lasch et al.	128/2.06 F
3,593,705	7/1971	Thomas et al.	128/2.06 A
3,853,119	12/1974	Peterson et al.	128/2.06 R
3,857,399	12/1974	Zacouto	128/419 P



1. In an installation for the processing of EKG signals, including a threshold element for detecting R-displays in the EKG; a signal suppressor element for suppressing the EKG signal in the signal channel for a predetermined time period after each R-display detected by said threshold element, said signal suppressor element comprising a monostable flip-flop including two capactively reactively connected transistors, one said transistor forming said threshold element for the R-displays of said EKG signals, said last-mentioned transistor having a collector resistance, said flip-flop having a condenser charged to a predetermined initial voltage value preceding the incidence of the respective R-display through the collector resistance of the blocked threshold element transistor, said suppressive time period being determined by the time span within which said flip-flop condenser discharges to a lower cutoff voltage value for said flip-flop through a base resistance of the other transistor and through the collector-emitter section of the threshold element transistor responsive to the latter being controlled into a conductive condition upon the incidence of the R-display, the improvement comprising: a high-ohmic resistance relative to the collector resistance of the threshold element transistor being connected in series in the charging path of said flip-flop condenser for increasing the charging time constants of said flip-flop condenser to a value so that, at heart frequencies not exceeding a median normal heart frequency value of about 80/min, the charging time period for a full condenser charging essentially corresponds to the time differential between R-display spacings and the refractive period of the heart at the selected heart frequency; and a diode bridging said high-ohmic resistance for discharging said condenser during said refractive period.

B 535,411

BRAKE LINING CONDITIONING MEANS

Richard S. Grewette, Utica; Robert J. Hammersmith, Rochester, and Richard F. Honigsbaum, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1974, Ser. No. 535,411

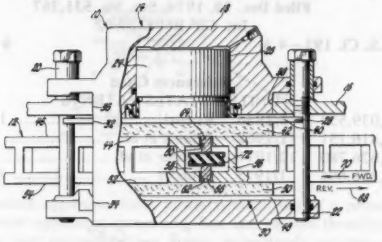
Int. Cl.[2] F16D 55/224

U.S. Cl. 188—71.1 6 Claims

References Cited

UNITED STATES PATENTS

2,102,915	12/1937	Riskel	51/DIG. 3
2,389,772	11/1945	Gilbert	188/73.1
2,695,695	11/1954	Gilfillan et al.	192/111 A
3,590,537	7/1971	Hennig et al.	51/132
3,628,639	12/1971	Daley, Jr.	188/73.3



1. In a disc brake assembly having a disc to be braked rotatable in forward and reverse directions, and a pair of brake pad assemblies having friction surfaces engageable in braking relation with opposed sides of said disc,

means for intermittently dressing said friction surfaces of said brake pad assemblies during brake operation, said dressing means comprising:

a pair of dressing members mounted in slots formed through said disc opposed sides,

means yieldably urging said dressing members toward engagement with said friction surfaces of said brake pad assemblies,

said dressing members being movable in said slots so as to extend outward beyond said disc opposed sides and being oriented relative to said disc and said brake pad assemblies to dress said friction surfaces of said brake pad assemblies only when said disc is rotating in the reverse direction,

and means limiting the dressing depth of said dressing members so as to obviate the dressing action when the brake is released and to limit the dressing depth when dressing action takes place.

B 541,710
ANNULAR TYPE BLOWOUT PREVENTER

Bolie C. Williams, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

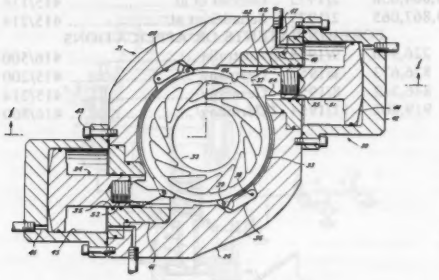
Filed Jan. 17, 1975, Ser. No. 541,710
Int. Cl.² E21B *33/06*
U.S. Cl. 251—1 B **14 Claims**

References Cited
UNITED STATES PATENTS

2,434,835	1/1948	Colley	251/4 X
2,609,836	9/1952	Knox	277/73
3,572,627	3/1971	Jones	251/1
3,737,139	6/1973	Watts	251/1

FOREIGN PATENTS OR APPLICATIONS

961,045	3/1957	Germany	251/5



1. An annular blowout preventer, comprising a housing having a bore therethrough and an annular recess about the bore, a packer including an annulus of resilient material within the recess, a plurality of flexible bands arranged within the recess about the packer in substantially equally spaced relation, means pivotally connecting one end of each band to the housing, a plurality of actuators each mounted for reciprocation in the housing and pivotally connected to the other end of each band, and means for moving each actuator in one direction to move said band toward the bore in order to contract the packer into sealing engagement about an object in the bore or upon itself when the bore is empty, and in another opposite direction to move said band away from the bore in order to permit the band to expand into the recess.

B 549,964
MICROWAVE OVEN INTERLOCK

Coy M. Tippy, and David F. Graff, both of New Iberia, La., assignors to Hobart Corporation, Troy, Ohio

Filed Feb. 14, 1975, Ser. No. 549,964
Int. Cl.² E05C *3/30*
U.S. Cl. 292—254 **11 Claims**

References Cited
UNITED STATES PATENTS

3,611,762	10/1971	McBurnie et al.	292/254 X
3,733,456	5/1973	Blackburn	219/10.55 C

1. A microwave oven interlock for preventing oven operation when the oven door is open or unlatched comprising:

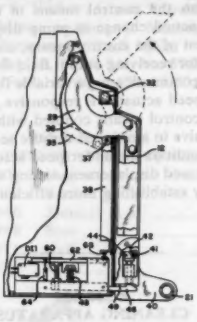
a cabinet with a front opening,

a door covering said opening and hinged to said cabinet to move between a closed position covering said opening and an open position permitting access into the oven,

strike means movably mounted on said cabinet for latching said oven door in its closed position with said strike means in a first position,

disengagement means in said oven door for moving said strike means to a second position allowing said oven door to open,

position sensing means for sensing the position of said oven door, and



means, responsive to said strike means moving to said second position, or to said position sensing means indicating that said oven door is not in said closed position, arranged to prevent operation of the oven.

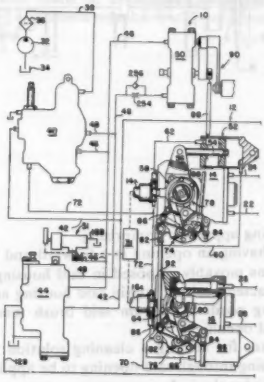
B 551,809
UNDERSPEED ACTUATOR WITH PART THROTTLE CONTROL

Cyril W. Habiger, and William J. Spivey, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 20, 1975, Ser. No. 551,809
Int. Cl.² F16H *39/46*
U.S. Cl. 60—431 **8 Claims**

References Cited
UNITED STATES PATENTS

3,228,184	1/1966	Harbidge et al.	60/433
3,477,225	11/1969	Cryder et al.	60/433
3,528,243	9/1970	Cryder et al.	60/451 X
3,785,754	1/1974	Miller	60/449 X



1. A control system for regulating displacement of a pump unit in a hydrostatic transmission including input means coupled with a prime mover having a variable throttle setting and output means, the control system having a pump means driven in conjunction with the transmission input means to produce output fluid flow proportional to the operating speed of the transmission input means, and comprising

control means coupled with the pump unit for selectively adjusting its displacement,

a hydraulically responsive underspeed actuator operatively coupled with the control means in order to vary the amount of actual change in pump displacement relative to movement of the control means, and

signal means for receiving output fluid flow from the pump means and communicating a variable fluid signal to which the underspeed actuator is responsive, and

part throttle control means coupled with the prime mover and responsive to a reduced throttle setting for the prime mover to condition the underspeed actuator for maintaining an increased displacement setting of the pump means and thereby establishing more efficient transmission operation.

B 553,629

CLEANING APPARATUS

Masahiko Maruyama, and Shosuke Oka, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1975, Ser. No. 553,629

Claims priority, application Japan, Feb. 27, 1974, 49-23572

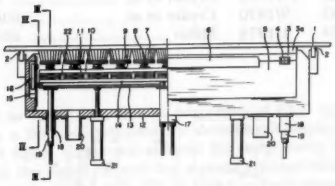
Int. Cl.² A47L *1/02*

U.S. Cl. 15—302 **10 Claims**

References Cited

UNITED STATES PATENTS

3,497,902	3/1970	Hartigan	15/302
3,715,774	2/1973	Fannon	15/302
3,775,804	12/1973	Hoener	15/302



1. A cleaning apparatus comprising:

a housing having an opening in a forward end thereof,

brush means movably disposed in said housing between a first retracted position within said housing and a second projecting position wherein said brush means projects from said opening;

nozzle means for feeding a cleaning solution from within said housing through said opening to be applied against a surface to be cleaned;

means for moving said brush means in said second projecting position thereof under contacting relation with said surface to be cleaned for cleaning said surface;

a movable member supported on said forward end of said housing for closing said opening therein when said brush means is disposed in said first retracted position; and

wiper means carried by said movable member for contacting said surface to be cleaned.

B 563,412

STATOR VANE ASSEMBLY FOR GAS TURBINES

Claude R. Booher, Jr., West Chester, Pa., and Elbert H. Wiley, Wenonah, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 28, 1975, Ser. No. 563,412

Int. Cl.² F01D *9/02, 5/14*

U.S. Cl. 415—136 **9 Claims**

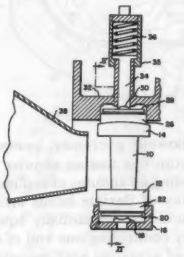
References Cited

UNITED STATES PATENTS

1,891,948	12/1932	Rice	416/500
2,595,829	5/1952	Dean	416/500
2,801,076	7/1957	Terrell et al.	415/200
2,819,869	1/1958	Meyer, Jr.	416/500
3,843,279	10/1974	Crossley et al.	415/138
3,857,649	12/1974	Schaller et al.	415/217
3,864,056	2/1975	Gabriel et al.	415/116
3,867,065	2/1975	Schaller et al.	415/214

FOREIGN PATENTS OR APPLICATIONS

226,940	9/1958	Australia	416/500
826,673	1/1952	Germany	415/200
846,342	8/1952	Germany	415/214
919,802	11/1954	Germany	416/500



1. A stator vane assembly for a gas turbine comprising a plurality of airfoil vanes, an end cap at each end of each vane, said vanes and end caps being made of a ceramic material and the end caps being disposed to support the vanes in a circular array, each vane and the end caps associated therewith having interengaging surfaces constituting pivot and seat surfaces, said surfaces being curved surfaces of compound curvature having major and minor radii of curvature, the major radius of each pivot surface being less than the major radius of the corresponding seat surface and the minor radius of each pivot surface being less than the minor radius of the corresponding seat surface and resilient means for pressing said pivot and seat surfaces into engagement with each other.

B 570,862

APPARATUS FOR PROTECTING TOOLS OF HYDRAULIC PRESSES

Friedrich Pfeifer, Waghausel, Germany, assignor to SMG Suddeutsche Maschinenbau-Gesellschaft mbH, Waghausel, Germany

Filed Apr. 23, 1975, Ser. No. 570,862

Claims priority, application Germany, Apr. 23, 1974, 2419390

Int. Cl.³ B26D *7/24*

U.S. Cl. 83—61 **4 Claims**

References Cited

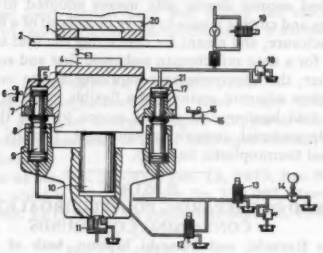
UNITED STATES PATENTS

3,568,553	3/1971	Wanner et al.	83/58

1. Tool protecting apparatus for protecting tools of hydraulically operated fine-punch presses of the type having main

piston means for imparting primary punching movements to a movable press ram and quick-closing piston means arranged at the ram separate from the main piston means for imparting final punching movement to said ram; said apparatus comprising:

keying piston means arranged at said ram in series with and extending in the same direction as the quick-closing piston means, said keying piston means forming a keying gap which is variable in size depending on the resistance



pressure applied to the ram by the workpieces being processed and impediments disposed between the workpieces and the ram whereby said keying gap is reduced below a predetermined distance when undersirable impediments above a certain size and rigidity are disposed in the travel path of the ram,

and safety stop switch means operable to stop application of pressing forces to said press ram in response to closing of said gap below said predetermined value.

B 576,859

SYNTHETIC FIBROUS BUFF

Burton E. Frank, Shoreview; Lloyd W. Legacy, White Bear Lake, and Dean S. Walker, Grant Township, Washington County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 12, 1975, Ser. No. 576,859

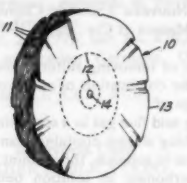
Int. Cl.[2] B24D *17/00, 11/00;* A47L *25/00;* B24D *13/04*

U.S. Cl. 51—358 15 Claims

References Cited

UNITED STATES PATENTS

2,108,985	2/1938	Hague	15/230.15
2,885,834	5/1959	Rock	15/230.14
3,260,582	7/1966	Zimmer et al.	51/401
3,387,956	6/1968	Blue	51/297
3,597,887	8/1971	Hall	51/400
3,733,754	5/1973	Jeske	51/358



1. A rotary buff comprised of a plurality of layers of nonwoven fabric held together by fastening means, said nonwoven fabric having a fabric density on the order of 0.1 to 0.6 grams per cc, being at least about 0.1 mm thick and consisting essentially of a multiplicity of randomly disposed, adhesively bonded, flexible, durable, tough, resilient organic fibers no larger in size than about 8 denier, having a length on the order of 1 cm to 15 cm and a break strength of at least about 3.5 grams per denier, said fibers being formed of a synthetic organic fiber-forming polymeric material having a melting or decomposition temperature above about 175°C, said fibers being firmly adhesively bonded at points where they cross and contact one another to form a uniform web with a rigid but not brittle binder material which has a melting or decomposition temperature above about 175°C, said binder material being contained in said fabric in an amount sufficient to firmly adherently bind said fibers together but insufficient to immobilize said fibers.

B 66,272

AIR POLLUTION CONTROL SYSTEM AND METHOD

Herschel A. Klein, Windsor, and Carl R. Bozzuto, Waterbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 24, 1970, Ser. No. 66,272
Int. Cl.² B01D *53/34*
U.S. Cl. 423—242 **4 Claims**

References Cited
UNITED STATES PATENTS

2,042,477	6/1936	Miller et al.	23/132
2,080,779	5/1937	Lessing	23/2
2,090,143	8/1937	Nonhebel et al.	23/2
2,113,198	4/1938	Nonhebel et al.	23/2

OTHER PUBLICATIONS

Pearson, J. L., et al.; "A Dissertation on the Howden – I.C.I. Flue Gas Washing System," The Institute of Fuel; London; 1934; pp. 1, 12–16, 19–23.

Pascal, et al.; Nouveau Traite de Chimie Minerale, Vol. IV, pp. 416–417; Masson et Cie., Paris, 1958.

1. A method of removing sulfur dioxide from the flue gas produced by the combustion of sulfur-containing fuels comprising the steps of:

a. contacting said flue gas in a scrubbing zone with an aqueous scrubbing stream containing an alkaline earth metal bicarbonate in solution, the amount of said alkaline earth metal bicarbonate in solution being in excess of the amount required to completely react with said sulfur dioxide in said flue gas whereby said sulfur oxides react with said bicarbonate to produce alkaline earth metal bisulfite in solution and whereby the pH of said aqueous scrubbing stream during said contact is maintained between 6.0 and 4.5,

b. withdrawing said aqueous scrubbing solution from said scrubbing zone,

c. contacting said aqueous scrubbing stream containing said bisulfite in solution with an oxygen-containing gas stream whereby said bisulfite is oxidized to form alkaline earth metal sulfate precipitate and sulfuric acid in solution,

d. introducing alkaline earth metal carbonate into said aqueous scrubbing stream whereby said carbonate reacts with said sulfuric acid to form additional alkaline earth metal sulfate precipitate and said excess alkaline earth metal bicarbonate in solution,

e. separating said alkaline earth metal sulfate precipitate from said aqueous scrubbing stream, and

f. recycling said aqueous scrubbing stream containing said excess alkaline earth metal bicarbonate to step (a).

B 339,446

BUTT WELDER CUTTING ELEMENT TEMPERATURE CONTROL

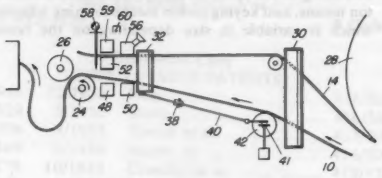
David Emil Johnson, Macedon, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,446
Int. Cl.² B31F *5/00*; **B65H** *19/08*
U.S. Cl. 156—159 **6 Claims**

References Cited
UNITED STATES PATENTS

2,707,985	5/1955	Binnall	156/515
3,015,600	1/1962	Cook	156/515
3,135,077	6/1964	Siegel et al.	156/515
3,384,527	5/1968	Fener	156/515
3,586,584	6/1971	Wilkins	156/504 X
3,595,456	7/1971	Rosenthal	83/171 X
3,721,801	3/1973	Bate	156/515 X
3,769,124	10/1973	Johnson	156/504 X
3,834,971	9/1974	Johnson	156/507

1. In an apparatus comprising means for feeding a first thermoplastic sheet into the nip of a pair of rolls; drive means operating said rolls drawing said first sheet into proximity to said first sheet and said pair of rolls; clamp means associated with said second sheet; clamp means associated with said first sheet; electrical conductive heating and cutting means proximate to said clamp means movably positioned to pass through both said first and said second sheets, thereby severing said



first and second sheets; gate means adopted to allow said heating and cutting means to move in and out of a heat insulating enclosure; and means for contacting the thus severed, hot edges for a time sufficient to weld said first and second edges together; the improvement comprising a gate means which comprises adjacent sections of a flexible material adapted to allow said heating and cutting means to pass through said flexible material comprising said gate, thereby preventing residual thermoplastic build-up.

B 351,455

METHOD OF PREPARING POLYFLUOROALKYL GROUP CONTAINING COMPOUNDS

Takao Hayashi, and Masashi Matsuo, both of Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1973, Ser. No. 351,455
Claims priority, application Japan, Apr. 14, 1972, 47-37520
Int. Cl.² C07C *27/00, 29/00, 67/20*
U.S. Cl. 260—493 **12 Claims**

References Cited
UNITED STATES PATENTS

3,157,705	11/1964	Pearce	260/631 R
3,226,449	12/1965	Blanchard et al.	260/493
3,562,315	2/1971	Cookson et al.	260/493

1. A method of preparing perfluoroalkyl group containing compounds which comprises reacting a polyfluoroalkyl halide having the formula $R_fCH_2CH_2X$, wherein R_f represents a perfluoroalkyl group containing 1–23 carbon atoms and X represents a bromine atom or an iodine atom, with water and an amide having the formula RCONR'R'', wherein R, R' and R'' represent hydrogen atoms or lower alkyl groups under conditions in which the mole ratio of water to said polyfluoroalkyl halide is in the range from 1 : 1 to 10 : 1 and the ratio of said amide to said polyfluoroalkyl halide is at least 1 : 1 at a temperature from about 80° to 200°C.

B 369,221

PHOSPHAZENE COMPOSITION

James T. F. Kao, 1122 Castle Kirk Drive, Baton Rouge, La. 70808

Continuation-in-part of Ser. No. 339,902, March 9, 1973, abandoned. This application June 12, 1973, Ser. No. 369,221
Int. Cl.² C07F *9/15*
U.S. Cl. 260—927 N **8 Claims**

References Cited
UNITED STATES PATENTS

2,681,295	6/1954	Hamalainen	260/927 N X
3,294,872	12/1966	Allcock	260/973 X
3,459,838	8/1969	Klender	260/973 X
3,795,526	3/1974	Bergeron	260/927 N X

1. In a process for the preparation of a fire retardant phos-

phonitrilate polymer consisting essentially of the steps of (a) heating a phosphonitrilic halide with at least a stoichiometric amount of an alkali metal compound of the formula MOR, wherein M is an alkali metal and R is a hydrocarbyl or halogen-substituted hydrocarbyl radical having up to about 8 carbon atoms to produce a phosphonitrilate polymer, (b) reacting a phosphonitrilic halide with less than the stoichiometric amount of said alkali metal compound producing a phosphonitrilate polymer containing a substantial amount of residual halide groups and (c) heating the phosphonitrilate polymer of (a) with the phosphonitrilate polymer containing a substantial amount of residual halide groups of (b) under conditions sufficient to drive off an organic halide, whereby the viscosity of the resultant phosphonitrilate polymer and its average molecular weight are increased, the improvement comprising preparing at least one of the polymers of (a) and (b) by a process of adding said alkali metal compound to said phosphonitrilic halide, said phosphonitrilic halide being contained in an inert solvent such that during the reaction a substantial excess of said phosphonitrilic halide is maintained.

B 399,098

VETERINARY FEEDSTUFFS

Florin Seng, Cologne-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 323,953, Jan. 15, 1973, Pat. No. 3,856,957, which is a division of Ser. No. 130,007, March 31, 1971, Pat. No. 3,819,616. This application Sept. 20, 1973, Ser. No. 399,098

Int. Cl.² A61K *31/54*

U.S. Cl. 424—246 **34 Claims**

References Cited

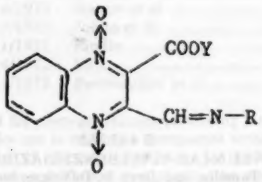
UNITED STATES PATENTS

3,371,090	2/1968	Johnston	260/240 G
3,493,572	2/1970	Johnston	260/250 QN
3,793,323	2/1974	Seng et al.	260/250 QN

FOREIGN PATENTS OR APPLICATIONS

1,215,815	12/1970	United Kingdom	260/250 Q
7,104,392	10/1974	Netherlands	260/250 QN

17. A method of promoting or enhancing growth in animals which comprises feeding an animal a growth promoting amount of a veterinary feedstuff or additive which comprises a growth promoting amount of a compound of the formula



or a pharmaceutically acceptable nontoxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation R^5-NH_3; and

each of R and R^5 is

in which each R^1 and R^2 when taken independently is identical to or different from the other, and is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and hydroxyalkyl of 1 to 4 carbon atoms, or when R^1 and R^2 are taken together with the nitrogen atom to which they are attached, a 6-membered heterocyclic ring wherein the nitrogen atom is the only heteroatom or wherein oxygen or SO_2 is also present as a ring member, in combination with a nutritious material or drinking water.

B 410,074

PRODUCTION OF ω-FORMYL CARBOXYLIC ACID ESTERS

Helmut Waldmann, Leverkusen; Wulf Schwerdtel, Leverkusen-Steinbuechel, and Wolfgang Swodenk, Odenthal-Globusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 26, 1973, Ser. No. 410,074

Claims priority, application Germany, Oct. 27, 1972, 2252780

Int. Cl.² C07C *67/00*

U.S. Cl. 260—483 **11 Claims**

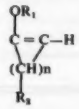
References Cited

OTHER PUBLICATIONS

J.A.C.S., 64, (1942), p. 1419.

J. Org. Chem., 12, (1947), p. 163.

1. A process for the production of an ω-formyl carboxylic acid ester, comprising reacting hydrogen peroxide with an enol ether of a cyclic ketone of the formula

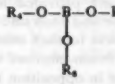


wherein

R_1 is alkyl of 1 to 3 carbon atoms, or alkyl of 1 to 3 carbon atoms substituted by fluorine, chlorine, alkoxy of 1 to 3 carbon atoms, cyano or phenyl,

n is an integer of about 3 to 10, and R_3 each independently is hydrogen, fluorine, chlorine, cyano, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms substituted by fluorine, chlorine, cyano or alkoxy of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms substituted by fluorine, chlorine, cyano, alkoxy of 1 to 4 carbon atoms or alkyl of 1 to 6 carbon atoms,

in the presence of a catalyst consisting essentially of a member selected from the group consisting of a compound of boron, a compound of boron plus a compound of a metal of the Fifth Secondary Group of the Periodic Table, and a compound of boron plus a compound of a metal of the Sixth Secondary Group of the Periodic Table, said compound of boron being selected from the group consisting of a boron oxide, a boric acid, a salt of a boric acid, boron trifluoride, boron trichloride, a boric acid ester of the formula



wherein

R_4, R_5 and R_6 each independently is alkyl of 1 to 6 carbon atoms, alkyl of 1 to about 6 carbon atoms substituted by hydroxyl, fluorine, chlorine, alkoxy of 1 to 3 carbon atoms, phenyl or phenyl substituted by fluorine, chlorine or alkyl of 1 to 3 carbon atoms, or an adduct of boron trifluoride, boron trichloride or a boric acid ester of the formula

with an alcohol of the formula R_4—OH, an alcoholate of the formula R_4—OMe, a carboxylic acid of the formula R_4—COOH, an ether of the formula R_4—O—R_8 or a hydrogen halide, wherein Me is an alkali or alkaline earth metal, zinc or aluminum, said compound of a metal of the Fifth or Sixth Secondary Group of the Periodic Table being selected from the group consisting of a carboxylate, carbonyl, nitrosocarbonyl, acetonate and acetylacetonate at a temperature of −80° to +30°C.

B 431,785

APPARATUS FOR CRYSTAL GROWTH IN OUTER SPACE

Hans Nagorsen, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Erlangen, Munich, Germany

Continuation of Ser. No. 214,704, Jan. 3, 1972, abandoned. This application Jan. 8, 1974, Ser. No. 431,785

Claims priority, application Germany, Jan. 7, 1971, 2100540

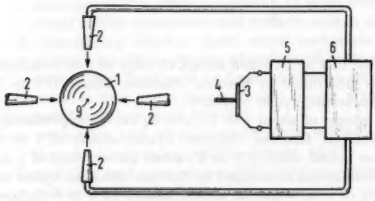
Int. Cl.² B01J *17/00, 17/20*

U.S. Cl. 23—273 SP **7 Claims**

References Cited

UNITED STATES PATENTS

2,686,864	8/1954	Wroughton et al.	23/301 SP
3,258,314	6/1966	Redmond et al.	23/301 SP



1. Means for producing semiconductor crystals particularly silicon crystals by oriented crystallization from a melt which is produced in a suspended state under cosmic vacuum, on a space vehicle comprising six beam emitters affixed to a common holder for producing an oriented holding beam whereby two of said beam emitters are provided for each of three cartesian coordinates of space and each said two of said beam emitters are so oriented relative to each other that the beams which are emitted from the beam emitters which are related to each in pairs, are oriented in opposition to one another in each pair, and the beams emitted by the said six beam emitters all meet in a common point between said beam emitters, means for controlling the intensities of the beams emitted by the six beam emitters that said six beam emitters retain, in a freely suspended state, the melt which is located at the point of intersection of the six beams, and means for heating the melt in such a manner that the heating effect is focused upon the point of intersection of the six beams.

B 442,810

PROCESS FOR THE PREPARATION OF 7-ACYLAMINO-ESACETOXYCEPHALOSPORANIC DERIVATIVES

Hans-Joachim Kabbe, Leverkusen, and Uwe Petersen, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 14, 1974, Ser. No. 442,810

Claims priority, application Germany, Feb. 26, 1973, 2309599

Int. Cl.² C07D *501/10*

U.S. Cl. 260—243 C **14 Claims**

References Cited

UNITED STATES PATENTS

3,725,397	4/1973	Graham et al.	260/243 C
3,725,399	4/1973	Ellerton et al.	260/243 C
3,781,283	12/1973	Bormann et al.	260/243 C
3,799,924	3/1974	Jackson et al.	260/243 C
3,852,281	12/1974	Verweij	260/243 C
3,853,861	12/1974	Garbrecht	260/243 C

1. In the process for the preparation of a 7-acylamido-3-methylceph-3-em-4-carboxylate by heating the corresponding 6-acylamidopenicillanate sulfoxide at temperatures of from 60° to 150°C in an organic solvent with removal of the water formed, the improvement which comprises conducting the heating in the presence of from 1 to 20 mol percent, based on the sulfoxide present, of a heavy metal sulfonate of the formula:

$$Me(R''SO_3)_n$$

in which

Me is a cation having a valence of 1 to 3 and selected from the group consisting of the copper, silver, gold, zinc, cadmium, mercury thallium, tin, lead, iron, cobalt and nickel cations;

R'' is alkyl of 1 to 4 carbon atoms, fluoroalkyl of 1 to 4 carbon atoms, phenyl, naphthyl or phenyl or naphthyl substituted by at least one substituent selected from the group consisting of methyl and halo; and

n has a value of 1 to 3 and corresponds to the valence of Me.

B 443,563

NOVEL N-(AR-VINYLBENZYL)AZIRIDINES

Donald A. Tomalia, and Jerry D. DeVrieze, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 246,872, April 24, 1972, Pat. No. 3,833,557. This application Feb. 19, 1974, Ser. No. 443,563

Int. Cl.² C08F *26/06, 126/06, 226/06*

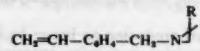
U.S. Cl. 260—82.1 **11 Claims**

References Cited

UNITED STATES PATENTS

3,226,372	12/1965	Tousignant et al.	260/88.1 PA X
3,833,557	9/1974	Tomalia et al.	260/88.1 PA X

1. A thermally curable vinyl addition polymer containing an N-(m or p-vinylbenzyl)aziridine corresponding to the structural formula



wherein R and R' are hydrogen or alkyl of from interpolymerized 1 to 4 carbon atoms in therpolymerized form in sufficient quantity to make the polymer thermally curable.

B 455,481

METAL HALIDE COMPLEXES OF 4-CYANO-2,2-DIMETHYLBUTYRALDOXIME-N-METHYLCARBAMATE

William Arthur Henderson, Jr., Stamford, Conn., and Fausto Ramirez, Goshen, Va., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 27, 1974, Ser. No. 455,481
Int. Cl.² C07F 3/06
U.S. Cl. 260—429.9 **12 Claims**

References Cited
UNITED STATES PATENTS

3,621,049	11/1971	Addor	260/465.4
3,644,453	2/1972	Onsager	260/438.1
3,686,244	8/1972	Marks	260/438.1 X

OTHER PUBLICATIONS

Lindqvist, Inorganic Adduct Molecules Academic Press, Inc., N.Y., pp. 19, 30 and 31, (1963).

1. The solid metal halide complex of 4-cyano-2,2-dimethylbutyraldoxime-N-methylcarbamate wherein said metal is cobalt, copper or zinc.

B 455,759

METHOD FOR FORMING A LENTICULAR ARRAY BY PHOTOGRAPHIC MEANS

Robert L. Lamberts, Penfield, and Nelson R. Nail, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 28, 1974, Ser. No. 455,759
Int. Cl.² G03F 5/00; G03C 5/00
U.S. Cl. 96—45 **7 Claims**

References Cited
UNITED STATES PATENTS

2,794,739	6/1957	Gretener	96/81
3,425,770	2/1969	Mueller et al.	350/162 R
3,582,329	6/1971	Ivanov et al.	96/35
3,592,529	7/1971	Juhlin et al.	350/162 R
3,617,281	11/1971	Lindin	96/81
3,656,849	4/1972	Lu	96/27 H
3,775,110	11/1973	Bestenreiner et al.	96/81

1. A method for photographically producing a transparent master target for use in making a transparent screen element having an array of discrete, contiguous lenticules each of which has the same predetermined profile, the master target being a photosensitive material comprising a transparent support having at least one layer of a photographic emulsion on a surface thereof, comprising the steps of:

determining an exposure intensity from the exposure factors for the emulsion on the photosensitive material with respect to each of a number of discrete, contiguous areas forming a pattern of areas corresponding to the size of a lenticule for producing the predetermined profile;

moving the photosensitive material intermittently in X-Y mutually perpendicular directions to position each discrete area relative to a source of illumination;

exposing each discrete area, while the photosensitive material is stationary, to the source of illumination in accordance with the established exposure intensity for the respective discrete area; and

processing the photosensitive material, whereby each discrete area has an optical density related to a corresponding portion of the predetermined profile of the lenticule.

4. A method of exposing a photosensitive material having predetermined exposure factors in a repetitive and overlapping sequence to a transparent master target, the target having at least one pattern comprising a plurality of discrete, contiguous areas, each of which has an optical density related to the exposure factors of the material, for producing, upon processing of the material, an array of discrete, contiguous lenticules each of which has the same predetermined profile, comprising the steps of:

moving the material continuously in one direction at a generally uniform rate;

moving continuously an imaging system including a source of illumination, the transparent master target, and a lens system for projecting a minified image of the pattern of areas on the material in an other direction at a generally uniform rate in synchronism with and normal to the movement of the material in the one direction, the rate of movement of the imaging system being less than that of the material;

triggering the source of illumination in timed relation to the movement of the material so as to expose the material to successive contiguous images of the pattern of areas in the one direction, each exposure of an image of the pattern of areas being displaced in the other direction by a distance generally equivalent to one of the areas; and

repeating the triggering step for a number of times equivalent to the number of areas comprising one dimension of the pattern of areas, after which, overlapping exposure of the material to the pattern of areas will occur with continued repetition of the triggering step.

B 460,846

PREPARATION AND USE OF MAGNESIUM ACETYLENE COMPLEX

John Nicholson Gardner, Garrison, N.Y., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 402,544, Oct. 1, 1973, abandoned. This application Apr. 15, 1974, Ser. No. 460,846
Int. Cl.² C07F 3/02
U.S. Cl. 260—665 R **3 Claims**

References Cited
UNITED STATES PATENTS

2,125,384	8/1938	Macallum	260/665 R X
2,200,941	5/1940	Vogt	260/665 R
2,938,932	5/1960	Normant	260/665 G
3,441,621	4/1969	Tedeschi	260/665 R
3,770,655	11/1973	Vandenberg	260/665 R

OTHER PUBLICATIONS

Chemical Abstracts, V. 70, 86920e, (1969).
Chemical Abstracts, V. 41, 5043q, 5405g, (1947).
Chemical Abstracts, V. 64, 17623c, (1966).
Chemical Abstracts, V. 63, 17908e, (1965).

1. A process of producing a magnesium acetylene complex comprising reacting in liquid ammonia, magnesium and acetylene gas wherein the reaction medium contains from about 5 to 97% by weight of sodium in the form of sodium metal or combined with ammonia as sodamide, based upon the weight of sodium and magnesium in the reaction medium, said reaction taking place at a temperature of from −100°C. to +100°C. and a pressure of from about 15 psia to 1000 psia.

B 462,424
METHOD OF MAKING REINFORCED COMPOSITE STRUCTURES

Lee C. McCandless, Silver Spring, Md., and Glenn E. Weber, Vienna, Va., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 19, 1974, Ser. No. 462,424
Int. Cl. C23b 7/02, 5/46
U.S. Cl. 204—9 **6 Claims**

References Cited
UNITED STATES PATENTS

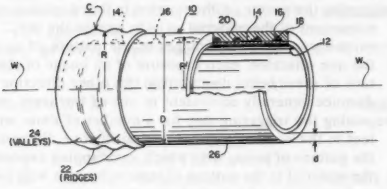
3,505,177	4/1970	Chester et al.	204/9
3,763,001	10/1973	Withers	204/16

FOREIGN PATENTS OR APPLICATIONS

85,173	5/1895	Germany	204/3

OTHER PUBLICATIONS

Plating, Apr. 1970, pp. 342–347.



1. The process of making a composite structure on a mandrel having a smooth outer surface, said structure including multiple layers of reinforcing filaments spaced at different levels and embedded in a metallic matrix material, including the steps of:

a. winding a filament having at least one flat side as viewed in cross-section onto said smooth outer surface with the flat side thereagainst and precision spacing successive convolutions;

b. depositing metallic matrix material by electroforming onto the convolutions of the filament and onto said outer surface exposed therebetween, and continuing such electroforming until the matrix material between the convolutions builds up above the level of the wound filament;

c. machining the structure by removing matrix material until a new smooth outer surface is exposed above the level of the filament; and

d. repeating said steps to produce another layer.

B 462,893
IMAGING PROCESSES AND ELEMENTS THEREFOR

Roger W. Nelson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 22, 1974, Ser. No. 462,893
Int. Cl.² G03C 1/68, 1/70
U.S. Cl. 96—35.1 **27 Claims**

References Cited
UNITED STATES PATENTS

2,892,712	6/1959	Plambeck	96/35.1
3,779,778	12/1973	Smith et al.	96/35.1

OTHER PUBLICATIONS

Aso, C. et al., J. of Polymer Science: part A-1, Vol. 7, pp. 497–511, 1969.

1. A radiation-sensitive element comprising a thin film of a depolymerizable polymer of an aromatic 1,2-dialdehyde, said polymer having hydroxyl or polystyrene endcaps and a sensitizer capable, upon absorption of radiation, of producing products capable of initiating the depolymerization of said polymer.

16. A process of producing an image by imagewise depolymerization comprising imagewise exposing to radiation a coating comprising a polymer of an aromatic 1,2-dialdehyde, said polymer having hydroxyl or polystyrene endcaps.

21. A process of producing an image by imagewise depolymerization comprising imagewise exposing a coating comprising a polymer of an aromatic 1,2-dialdehyde, said polymer having hydroxyl or polystyrene endcaps and a sensitizer capable, upon absorption of radiation, of yielding an acidic product, and heating said composition to about 90° C to about 150° C.

25. A process of obtaining an image by depolymerization comprising exposing to electromagnetic radiation a photographic element comprising a polymer of an aromatic 1,2-dialdehyde, said polymer having hydroxyl or polystyrene endcaps and a sensitizer which, upon exposure, gives acidic products, contacting said element with a developer sheet comprising a support and a heat labile ammonia or amine-releasing compound and heating to a temperature of about 90° to about 150° C.

B 465,202
ISOMERIZING CIS-CAROTENOIDS TO ALL-TRANS-CAROTENOIDS

Joseph Donald Surmatis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 392,597, Aug. 29, 1973, abandoned. This application Apr. 29, 1974, Ser. No. 465,202
Int. Cl.² C07C 45/00
U.S. Cl. 260—598 **8 Claims**

References Cited
UNITED STATES PATENTS

3,441,623	4/1969	Surmatis	260/666

OTHER PUBLICATIONS

Eliel, Stereochemistry of Carbon Compounds, (1962), pp. 341–342.

1. A process for converting a cis-isomer of a solid carotenoid to an all-trans-isomer of the carotenoid, comprising: immersing the cis-isomer in water and heating to a temperature of from about 50°C. to about 120°C.

B 470,576
NOVEL OIL AND WATER REPELLENT COMPOSITION

Kazusuke Kirimoto, and Takao Hayashi, both of Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 291,335, Sept. 22, 1972, abandoned. This application May 16, 1974, Ser. No. 470,576
Int. Cl.² C08F 214/18, 216/18, 216/20
U.S. Cl. 260—63 UY **2 Claims**

References Cited
UNITED STATES PATENTS

2,991,277	7/1961	Schildknecht	260/86.1
3,025,279	3/1962	Barr	260/86.1
3,306,879	2/1967	Pattison	260/77.5
3,341,497	9/1967	Sherman et al.	260/72
3,403,122	9/1968	Sherman et al.	260/29.6
3,532,659	10/1970	Hager et al.	260/29.6
3,546,187	12/1970	Tandy	260/80.76
3,775,386	11/1973	Citron	260/80.3 E

1. An oil- and water-repellent composition, which comprises: a copolymer containing at least 25 weight percent, based on the total weight of monomers, of a fluoroalkyl monomer ester having the formula:

$$R_fR'OCOCR^2=CH_2$$

wherein R_f represents a straight or branched chain perfluoroalkyl group containing C_{3-15} carbon atoms; R' represents a straight or branched chain alkylene group containing C_{1-10}

carbon atoms; and R^3 represents a hydrogen atom or a methyl group,

$CF_3(CF_2)_7SO_2N(C_2H_7)(CH_2)_2OCOCH=CH_2$,
$CF_3(CF_2)_7SO_2N(CH_3)(CH_2)_2OCOC(CH_3)=CH_2$,
$(CF_3)_2CF(CF_2)_6CH_2CH(OH)CH_2OCOCH=CH_2$,
$(CF_3)_2CF(CF_2)_4CH_2CH(OCOCH_3)OCOC(CH_3)=CH_2$,
$CF_2ClCF_2CF(CF_3)_7CONHCOOCH=CH_2$,
$H(CF_2)_{10}CH_2OCOCH=CH_2$, or
$CF_2Cl(CF_2)_{10}CH_2OCOC(CH_3)=CH_2$; and from 5 to 50 weight percent, based on the total weight of monomers, of an alkyl vinyl ether selected from the group consisting of chloromethylvinyl ether, bromomethylvinyl ether, 2-chloroethylvinyl ether and chloropropylvinyl ether.

B 471,836

PERFLUOROALKYL ISOXAZOLES

Aime Cambon; Francois Jeanneaux, and Colette Massyn, all of Nice, France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed May 21, 1974, Ser. No. 471,836

Claims priority, application France, May 22, 1973, 73.18486

Int. Cl.² C07D *261/08*

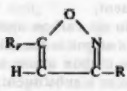
U.S. Cl. 260—307 H **1 Claim**

References Cited

OTHER PUBLICATIONS

Quilico, A. — "Chemistry of Heterocyclic Compounds" Vol. 17 (1962) Wiley Press — pp. 6–7, 105.

1. A perfluoroalkylated isoxazole having the formula:



wherein R_F is $C_3 - C_{15}$ perfluoroalkyl and R is the same as R_F or a different $C_3 - C_{15}$ perfluoroalkyl or $C_1 - C_7$ alkyl or phenyl or phenyl substituted by a $C_1 - C_7$ alkyl.

B 474,747

PROCESS AND POLYVINYL CHLORIDE INTERPOLYMER COMPOSITION FOR COATING A MATERIAL AND THE PRODUCT THEREFROM

Joseph A. Aurichio, Bronx, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 30, 1974, Ser. No. 474,747

Int. Cl.² C08F *259/04*

U.S. Cl. 428—515 **20 Claims**

References Cited

UNITED STATES PATENTS

3,504,053	3/1970	Williams	260/884
3,551,372	12/1970	Bader et al.	260/28.5
3,764,638	10/1973	Hwa et al.	260/884 X

1. A process for coating a material to confer wear resistance thereto comprising applying to said material an effective amount of a coating composition which comprises an interpolymer formed by polymerizing an acrylate in the presence of a vinyl chloride containing polymer, formed by suspension polymerization, said interpolymer containing from about 50 % to 95%, by weight, vinyl chloride polymer and about 5% to 50%, by weight, of an acrylate, said vinyl chloride containing polymer having a particle size of from about 5 to about 150 microns.

B 476,372

TOTAL STEROID SYNTHESIS EMPLOYING SUBSTITUTED ISOXAZOLE DERIVATIVES

Gabriel Saucy, Essex Fells, and John William Scott, Montclair, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 298,036, Oct. 16, 1972, Pat. No. 3,838,163, which is a division of Ser. No. 778,314, Nov. 28, 1968, Pat. No. 3,700,661. This application June 5, 1974, Ser. No. 476,372

Int. Cl.² C07D *317/26*

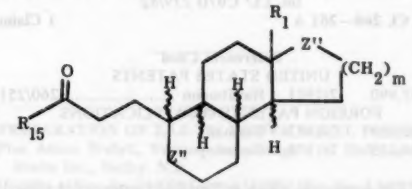
U.S. Cl. 260—340.9 **6 Claims**

References Cited

UNITED STATES PATENTS

3,591,606	7/1971	Warnant et al.	260/340.9
3,591,607	7/1971	Furst et al.	260/340.9 X

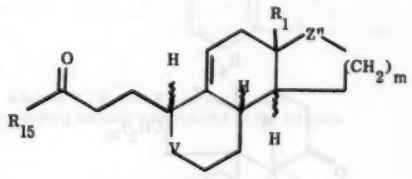
1. A compound of the formula



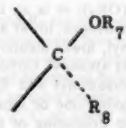
wherein Z'' is ketalized oxomethylene or a group of the formula

R_1 is a primary alkyl group from 1 to 5 carbons;
m is an integer having a value of 1 or 2; R_{15} is lower alkyl or hydrogen;
R_7 is hydrogen, lower alkyl, lower alkoxy-lower alkyl, phenyl-lower alkyl, tetrahydropyranyl or lower acyl derived from a hydrocarbyl monocarboxylic acid; and R_8 is hydrogen, lower alkyl, lower alkenyl or lower alkynyl.

3. A compound of the formula



wherein Z'' is ketalized oxomethylene or a group of the formula



m is an integer having a value of 1 or 2;
R_1 is a primary alkyl group from 1 to 5 carbons;
R_{18} is lower alkyl or hydrogen; V is ketalized oxomethylene;
R_7 is hydrogen, lower alkyl, lower alkoxy-lower alkyl, phenyl-lower alkyl, tetrahydropyranyl or lower acyl derived from a hydrocarbyl monocarboxylic acid;
and R_8 is hydrogen, lower alkyl, lower alkenyl or lower alkynyl.

B 480,625

7-METHYL-1-ISOPROPYL-4-PHENYL-5,6,7,8-TETRAHYDRO-2(1H)-QUINAZOLINONE

William G. Salmond, Mount Arlington, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation of Ser. No. 160,960, July 8, 1971, abandoned. This application June 19, 1974, Ser. No. 480,625
Int. Cl.² C07D *239/82*
U.S. Cl. 260—251 A **1 Claim**

References Cited
UNITED STATES PATENTS
3,563,990 2/1971 Hardtmann 260/251
FOREIGN PATENTS OR APPLICATIONS
2,232,919 2/1973 Germany
2,254,325 7/1973 Germany

1. The compound which is 7-methyl-1-isopropyl-4-phenyl-5,6,7,8-tetrahydro-2(1H)-quinazolinone.

B 482,709

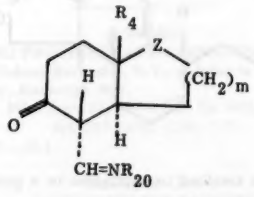
STEREOSPECIFIC TOTAL STEROIDAL SYNTHESIS VIA SUBSTITUTED C/D-TRANS INDANONES

Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 765,023, Oct. 4, 1968, Pat. No. 3,897,460. This application June 24, 1974, Ser. No. 482,709
Int. Cl.² C07E *119/00*
U.S. Cl. 260—240 G **1 Claim**

References Cited
UNITED STATES PATENTS
3,321,511 5/1967 Los 260/488

1. A compound of the formula



wherein R_4 is hydrogen or lower alkyl; Z is carbonyl, lower alkylenedioxy or $CH(OR_3)$; *m* is an integer having the value of 1 or 2; R_3 is hydrogen, lower alkyl, phenyl-lower alkyl, tetrahydropyranyl, lower alkanoyl, benzoyl, nitrobenzoyl, carboxy-lower alkanoyl, carboxy-benzoyl, trifluoroacetyl, or camphorsulfonyl and R_{20} is lower alkyl, phenyl and phenyl having one or more substituents selected from the group consisting of lower alkyl, lower alkoxy, amino, halogen and hydrogen
its optical enantiomer and the racemate thereof.

B 492,039

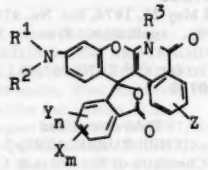
LACTONES OF THE BENZAZAXANTHENE SERIES AND DYE-FORMING COMPONENTS FOR DUPLICATION PROCESSES

Ernst Schefczik, Ludwigshafen, and Hellmut Kast, Bobenheim-Roxheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 26, 1974, Ser. No. 492,039
Int. Cl.² C07D *217/24*
U.S. Cl. 260—287 C **5 Claims**

References Cited
UNITED STATES PATENTS
3,787,325 1/1974 Hoover ..... 260/287 CF

1. A lactone of the benzazaxanthene series of the formula:



in which
R^1 is hydrogen or alkyl of one to three carbon atoms;
R^2 is phenyl or phenyl bearing alkyl of one to three carbon atoms, chloro or bromo as a substituent;
R^3 is hydrogen, phenyl, alkyl of one to six carbon atoms, phenyl-substituted alkyl of one to six atoms in the alkyl, phenyl bearing alkyl of one to three carbon atoms as a substituent, or phenyl bearing chloro as a substituent;
X is hydrogen, chloro, bromo or alkyl of one to three carbon atoms;
Y is hydrogen, chloro, bromo or alkyl of one to three carbon atoms;
Z is hydrogen, chloro, bromo, alkyl of one to four carbon atoms or phenyl;
m is the integer 1 to 2; and
n is the integer 1 to 2.

B 497,584

METHOD FOR APPLYING CLOSURE STRIPS TO PLASTIC FILM

H. Keith Howard, Ulysses, Kans., assignor to Uly-Pak, Inc., Ulysses, Kans.

Division of Ser. No. 279,905, Aug. 11, 1972, Pat. No. 3,846,209. This application Aug. 15, 1974, Ser. No. 497,584
Int. Cl.² A41H *37/00*; A44B *19/00*
U.S. Cl. 156—66 **23 Claims**

References Cited
UNITED STATES PATENTS
2,878,849 3/1959 Lingenfelter et al. 156/202
3,202,559 8/1965 Laguerre 156/66
3,839,128 10/1974 Arai 156/66
FOREIGN PATENTS OR APPLICATIONS
1,186,733 4/1970 United Kingdom 156/66

1. A method of continuously sealing the longitudinal edges of a strip of heat-weldable material to the corresponding longitudinal edges of two contiguous plies of heat-weldable material comprising the steps of
aligning said two plies of material in a generally horizontal plane to form an upper ply and a lower ply, the edge of

said lower ply extending beyond the edge of said upper ply;

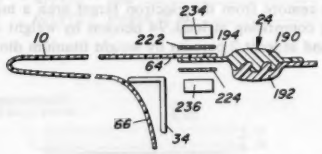
drawing said plies continuously along a sealing path;

aligning the edge of only a first one of said plies with a first heat sealing unit;

vertically aligning a first edge of said strip with the edge of said first ply;

continuously feeding said strip and first ply through said first heat sealing unit while guiding the second of said plies away from said first ply to bypass said first heat sealing unit;

heat-welding said first edge of said strip to the edge of said first ply in said heat sealing unit;



guiding said two plies and said strip along said sealing path from said first heat sealing unit to a second heat sealing unit;

aligning the edge of the second of said plies with said second heat sealing unit;

vertically aligning the second edge of said strip with the edge of said second ply;

continuously feeding said strip and said second ply through said second heat sealing unit; and

heat-welding said second edge of said strip to the edge of said second ply, whereby the longitudinal edges of said strip are sealed to the corresponding edges of said plies.

B 497,780

PROCESS AND COMPOSITION FOR WATER- AND OIL-ROOFING TEXTILES

Walter L. Vaughn, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 242,747, April 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 10,008, Feb. 9, 1970, abandoned. This application Aug. 15, 1974, Ser. No. 497,780

Int. Cl.² C08K *5/02*

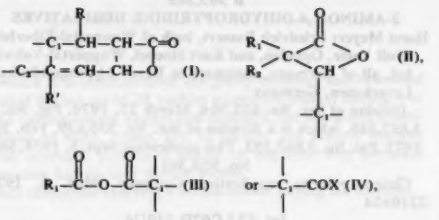
U.S. Cl. 260—33.8 UA **6 Claims**

References Cited

UNITED STATES PATENTS

2,803,615	8/1957	Ahlbrecht et al.	260/79.3 MU X
3,147,066	9/1964	Brown et al.	8/115.5 X
3,378,609	4/1968	Fasick et al.	260/890
3,523,930	8/1970	Maloney	260/80.8

1. A composition for improving the water- and/or oil-repellent properties of textiles which comprises an inert anhydrous solvent containing from about 0.1 to about 10 weight percent of a polymeric fluorocarbon finishing agent, and from about 0.3 to about 10 weight percent of one or more polyalkylene copolymer extenders of the formulae



wherein C_1 and C_2 are, independently, carbon atoms of the polyalkylene chain represented by $—CH_a—CH_a—_a$; R and R′ are, independently, hydrogen, an alkyl group of up to about 20 carbon atoms, phenyl, —COOH, or a segment of the polyalkylene chain; R_1 and R_2 are, independently, alkyl, aryl, aralkyl or alkaryl groups of up to about 20 carbon atoms, and X is a halogen, said polymeric extender having a molecular weight of from about 800 to about 8000.

B 501,128

PREPARATION OF 2,3,6-TRI-LOWER ALKYL PHENOLS

Pius Anton Wehrli, Verona, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 260,024, June 2, 1972, Pat. No. 3,857,892, which is a division of Ser. No. 805,365, March 7, 1969, Pat. No. 3,692,839. This application Aug. 28, 1974, Ser. No. 501,128

Int. Cl.² C07C *39/06*

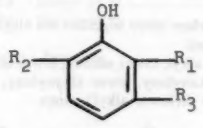
U.S. Cl. 260—621 H **3 Claims**

References Cited

UNITED STATES PATENTS

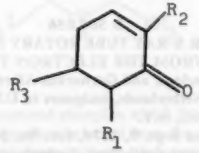
2,503,641	4/1950	Taylor	260/621 H
2,640,084	5/1953	Chitwood et al.	260/621 H
2,708,208	5/1955	Furman	260/621 H

1. A process of producing a hydroxy compound of the formula:



wherein R_1, R_2 and R_3 are lower alkyl;

comprising treating a compound of the formula:



wherein R_1, R_2 and R_3 are as above;

with a dehydrogenating agent selected from the group consisting of dichlorodicyanoquinone, mercuric acetate, and palladium on carbon, said treatment being carried out in the presence or absence of an inert organic solvent and at a temperature of from about 25°C. to about 300°C.

B 503,345

2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 455,304, March 27, 1974, Pat. No. 3,857,849, which is a division of Ser. No. 336,639, Feb. 28, 1973, Pat. No. 3,867,393. This application Sept. 5, 1974, Ser. No. 503,345

Claims priority, application Germany, Mar. 6, 1972, 2210674

Int. Cl.² C07D *239/26*

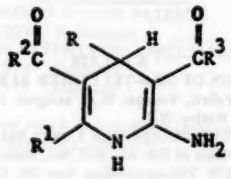
U.S. Cl. 260—256.4 Q **5 Claims**

References Cited

UNITED STATES PATENTS

2,359,329 10/1944 Phillips et al. ..... 260/287 CE

1. A compound of the formula:



wherein

R is quinolyl, isoquinolyl, or pyrimidyl unsubstituted or substituted by one or two members selected from the group consisting of lower alkyl, lower alkoxy and halogeno;

R^1, when taken independently, is hydrogen, lower alkyl, phenyl or pyridyl;

R^2, when taken independently, is lower alkyl, lower alkoxy, lower alkoxy(lower alkoxy), lower alkenyloxy, lower alkynyloxy, amino, lower alkylamino or di(lower alkyl)-amino,

R^1 and R^2 when taken together are alkylene of 2 to 4 carbon atoms; and

R^3 is lower alkyl, lower alkoxy, lower alkoxy(lower alkoxy), lower alkenyloxy, lower alkynyloxy, amino, lower alkylamino or di(lower alkyl)amino.

B 504,056

COATING FOR X-RAY TUBE ROTARY ANODE SURFACE REMOTE FROM THE ELECTRON TARGET AREA

Frederik Magendans, and Gerhardus Albertus te Raa, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 9, 1974, Ser. No. 504,056

Claims priority, application Netherlands, Sept. 20, 1973, 7312945

Int. Cl.² H01J *35/08*

U.S. Cl. 313—330 **10 Claims**

References Cited

UNITED STATES PATENTS

1,579,779 4/1926 Rentschler 313/330

2,090,636 8/1937 Olshevsky ..... 313/60 X

3,761,761 9/1973 Van Oostrom 313/311

3,819,971 6/1974 Kaplan et al. 313/60

1. A rotary anode for an X-ray tube having an electron target area and a surface remote therefrom, comprising on the surface remote from the electron target area a metal oxide coating comprising at least 94 percent by weight aluminum oxide and at least 2 percent by weight titanium dioxide.

B 504,877

N-(3,4-METHYLENEDIOXY-PHENYL)UREAS

George A. Cooke, Indian Lake, Denville, and William J. Houlihan, Mountain Lakes, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 351,093, April 13, 1973, Pat. No. 3,856,960, which is a division of Ser. No. 141,010, May 6, 1971, Pat. No. 3,748,331, which is a continuation-in-part of Ser. No. 34,902, May 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 881,325, Dec. 1, 1969, abandoned. This application Sept. 11, 1974, Ser. No. 504,877

Int. Cl.² C07D *317/68*

U.S. Cl. 260—340.5 **4 Claims**

References Cited

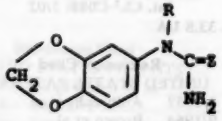
UNITED STATES PATENTS

3,496,179 2/1970 Hess 260/340.5

OTHER PUBLICATIONS

Sandoz Ltd., Chemical Abstracts, Vol. 64, 16550h to 16551a, (1966).

1. A compound of the formula:



wherein

R is alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms or cycloalkylalkyl of 4 to 7 total carbon atoms in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl is straight chain alkyl of 1 to 3 carbon atoms, and

Z is oxygen or sulfur.

B 510,677

SOLAR CELL ASSEMBLY

Henry W. Brandhorst, Jr., Berea, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Office of General Counsel-Code GP, Washington, D.C.

Filed Sept. 30, 1974, Ser. No. 510,677

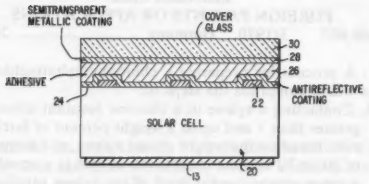
Int. Cl.² H01L *31/00, 31/04*

U.S. Cl. 136—89 9 Claims

References Cited

UNITED STATES PATENTS

3,313,971	4/1967	Nagy	136/89 X
3,472,698	10/1969	Mandelkorn	136/89
3,490,950	1/1970	Myer	136/89
3,532,551	10/1970	Scott	136/89
3,533,850	10/1970	Tarneja et al.	136/89
3,539,883	11/1970	Harrison	136/89 X
3,615,853	10/1971	Goldsmith et al.	136/89
3,653,970	4/1972	Iles	136/89
3,888,697	6/1975	Bogos et al.	136/89



1. A solar cell assembly comprising

a solar cell, and

a semi-transparent metallic layer of approximately 100–1000 Angstroms thickness, which covers substantially the entire upper surface of the solar cell, for controlling the radiant energy which is transmitted to the solar cell.

8. A solar cell assembly comprising

a solar cell,

a cover plate for protecting the upper surface of said solar cell,

a semi-transparent metallic layer on the surface of the said cover plate facting said protected surface of said solar cell, and

a high emissivity, low absorptivity anti-reflective layer overlying said protected surface of the solar cell, said cover plate being secured to said anti-reflective layer.

B 513,781

PROCESS FOR PRODUCING N-MONO-SUBSTITUTED FORMAMIDES

Florin Seng, Schildgen, and Kurt Ley, Odenthal-Globusch, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 10, 1974, Ser. No. 513,781

Claims priority, application Germany, Nov. 2, 1973, 2354717

Int. Cl.² C07C *103/02*

U.S. Cl. 260—561 R 7 Claims

References Cited

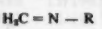
UNITED STATES PATENTS

3,852,349	12/1974	Turner et al.	260/561 R

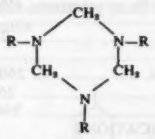
1. Process for producing an N-monosubstituted formamide having the formula:

in which R is selected from the group of linear and branched alkyl having up to 18 carbon atoms, cycloalkyl having 4 to 12 carbon atoms, phenyl and naphthyl, the foregoing substituted by nitro, cyano, aryl or alkoxy, and aralkyl wherein the aromatic portion is phenyl or naphthyl and the alkyl portion has up to 8 carbon atoms;

which comprises reacting a formaldimine having the formula:



in which R is as defined above; or a hexahydrotriazine having the formula



in which R is as defined above, with hydrogen peroxide.

B 515,642

2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 336,639, Feb. 28, 1973, Pat. No. 3,867,393. This application Oct. 17, 1974, Ser. No. 515,642

Claims priority, application Germany, Mar. 6, 1972, 2210674

Int. Cl.² C07D *213/56*

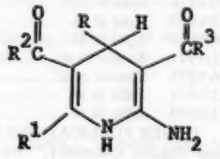
U.S. Cl. 260—295.5 A 5 Claims

References Cited

UNITED STATES PATENTS

3,775,422	11/1973	Bossert et al.	260/294.9
3,799,934	3/1974	Meyer et al.	260/295.5 R
3,799,936	3/1974	Meyer et al.	260/295.5 R

1. A compound of the formula:



wherein

R is phenyl; substituted phenyl in which the substituents are one of three members selected from the group consisting of lower alkyl, lower alkoxy, halogeno, nitro, cyano, trifluoromethyl, azido, carbo(lower alkoxy), lower alkylsulfonyl, lower alkylsulfinyl, lower alkylthio or phenyl; or naphthyl;

R^1 is hydrogen, lower alkyl, phenyl, or pyridyl; and one or both of R^2 and R^3 are independently selected from the group consisting of amino, lower alkyl-amino or di(lower alkyl)amino and the other of R^2 and R^3 when both are not

so selected is lower alkoxy, lower alkoxy(lower alkoxy), lower alkenyloxy or lower alkynyloxy.

B 519,095

REINFORCED STYRENE ACRYLONITRILE COPOLYMER HAVING IMPROVED TEMPERATURE RESISTANT PROPERTIES

Edward J. McInerney; John C. Rieber, and Douglas P. Thomas, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 30, 1974, Ser. No. 519,095
Int. Cl.² C08K 7/14
U.S. Cl. 260—42.18 **7 Claims**

References Cited
UNITED STATES PATENTS

2,807,603	9/1957	Parks et al.	260/42.49
3,075,944	1/1963	Wick	260/41
3,148,234	9/1964	Boyer	264/211
3,287,288	11/1966	Reiling	260/4
3,644,577	2/1972	Lee et al.	260/876 R
3,671,487	6/1972	Abolins	260/40 R
3,682,859	8/1972	Taylor	260/42.18

OTHER PUBLICATIONS

Hattori, Plastics Design & Processing, "The Effects of Fiber Glass Reinforcement on the Flammability Properties of Thermoplastics," Aug. 1967.

1. A composition comprising:
about 50 to about 80 weight percent of a styrene-acrylonitrile copolymer, reinforcing glass fibers in the range of about 8 to about 30 weight percent, a brominated flame-retarding additive, and polytetrafluorethylene in an amount sufficient to prevent dripping of the composition at flaming combustion conditions, said brominated flame-retarding additive being one of a brominated biphenyl or a brominated biphenyl oxide.

B 519,446

AQUEOUS CRYSTALLIZATION OF XYLITOL

Gerald Myer Jaffe, Verona, and Peter Hans Weinert, Wayne, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 296,404, Oct. 10, 1972, abandoned. This application Oct. 31, 1974, Ser. No. 519,446
Int. Cl.² C07C 27/26, 29/24
U.S. Cl. 260—637 R **3 Claims**

References Cited
UNITED STATES PATENTS

2,749,371	6/1956	Kasehagen	260/635 C
2,752,270	6/1956	Specht	260/635 C
2,917,390	12/1959	Apel et al.	260/635 C
2,989,569	6/1961	Apel et al.	260/635 C
3,558,725	1/1971	Kohno et al.	260/635 C
3,586,537	6/1971	Steiner et al.	260/635 C
3,627,636	12/1971	Jaffe et al.	260/635 C
3,784,408	1/1974	Jaffe et al.	260/635 C

OTHER PUBLICATIONS

Vogel, "Practical Organic Chemistry," 3rd ed. (1957), pp. 122 to 132.

1. In a process for obtaining crystalline xylitol substantially free of xylose from a mixture consisting essentially of about 30% xylitol, about 0.3% to about 0.5% xylose and water; said mixture being obtained by hydrogenating an aqueous xylose solution;
wherein the improvement comprises:
a. concentrating said mixture by heating at a temperature of about 30°C. to about 50°C. under reduced pressure to provide an aqueous solution consisting essentially of about 60% to about 75% xylitol, from about 1% to less than about 5% xylose, and water;
b. fractionally crystallizing xylitol from said aqueous solution by cooling to a temperature below 15°C.;
c. separating the crystallized xylitol from said solution;
d. recovering the mother liquor from said crystallization and combining said mother liquor with a subsequent aqueous hydrogenated xylose solution batch; and
e. recycling the combined solutions of step (d) through steps (a) to (d) to provide crystalline xylitol containing no more than 0.05% xylose.

B 526,447

METHOD OF PREPARING METHYLCHLOROMETHYLTETRACHLOROBENZENES AND DI-(CHLOROMETHYL)-TETRACHLOROBENZENES

Georg Blumenfeld, St. Augustin, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Nov. 22, 1974, Ser. No. 526,447
Claims priority, application Germany, Nov. 27, 1973, 2358949
Int. Cl.² B01J 1/10
U.S. Cl. 204—163 R **10 Claims**

References Cited
FOREIGN PATENTS OR APPLICATIONS

1,568,607	3/1970	Germany	204/163

1. A process for preparing a chloromethyltetrachlorobenzene which comprises the steps of:
A. Contacting a xylene in a chlorine resistant solvent with greater than 1 and up to 2 weight percent of ferric chloride, based on the weight of said xylene, at a temperature of 20° to 70°C in the the absence of light in a vessel having a vapor space over the level of the xylene solution;
B. Introducing into said vapor space gaseous chlorine and passing the same over said solution while strongly agitating the solution, said chlorine being introduced such that an excess pressure of 0.01 to 1 atmospheres exist over said solution;
C. Maintaining said solution at said temperature of 20° to 70°C for a period of time of at least 0.5 hours.
D. Thereafter directing energy-rich light at the vapor space over said solution while adding chlorine to said vapor space and maintaining the excess pressure over said solution at 0.01 to 1 atmospheres while maintaining the solution at a temperature of 50° to 80°C for a period of time of at least 0.5 hours and while continuing said agitation; and
E. Separating and recovering chloromethyltetrachlorobenzene.

B 528,962

CROSSLINKER-PLATINUM CATALYST-INHIBITOR AND METHOD OF PREPARATION THEREOF

Randolph G. Niemi, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 2, 1974, Ser. No. 528,962
Int. Cl.² C08G 77/04
U.S. Cl. 260—46.5 UA **20 Claims**

References Cited
UNITED STATES PATENTS

3,445,420	5/1969	Kookootsedes et al.	260/37
3,715,334	2/1973	Karstedt	260/46.5 UA

1. A method of preparing a crosslinker-platinum catalyst-inhibitor composition comprising mixing a siloxane having an average of at least three silicon-bonded hydrogen atoms per molecule, an acetylenic alcohol and a platinum catalyst to form a mixture, heating the mixture in a closed system for 10 to 30 hours at a temperature of from 50°C. to 90°C. and thereafter removing unreacted acetylenic alcohol by applying a reduced pressure of 700 to 750 millimeters of mercury for

at least 10 hours at a temperature of from 20°C. to 30°C., said siloxane having an average of at least three silicon-bonded hydrogen atoms per molecule, there being in addition an average of up to two monovalent organic radicals per silicon atom selected from the group consisting of monovalent hydrocarbon radicals free of aliphatic unsaturation and monovalent fluorinated hydrocarbon radicals free of aliphatic unsaturation, the remaining valences of the silicon atoms being satisfied by divalent radicals selected from the group consisting of divalent oxygen atoms, divalent hydrocarbon radicals free of aliphatic unsaturation, divalent hydrocarbon ether radicals free of aliphatic unsaturation and divalent fluorinated arylene radicals wherein at least one divalent radical is a divalent oxygen atom and said divalent radicals linking silicon atoms, said siloxane being liquid at a temperature of 50°C. to 90°C. in said mixture, said acetylenic alcohol having a vapor pressure sufficient to be removed from the mixture after the heating step at the temperature and pressure specified for the removal of unreacted acetylenic alcohol.

B 528,966

OLEFINIC SILOXANES AS PLATINUM INHIBITORS

Chi-Long Lee, and Ollie W. Marko, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 2, 1974, Ser. No. 528,966
Int. Cl.² C08G *77/04*
U.S. Cl. 260—46.5 UA **26 Claims**

References Cited
UNITED STATES PATENTS

3,445,420	5/1969	Kookootsedes et al.	260/37
3,697,473	10/1972	Polmanteer et al.	260/46.5 UA

1. A polyorganosiloxane consisting essentially of from 3 to 10 siloxane units in which

a. at least one siloxane unit is selected from the group consisting of

$RHSiO$ and $R_2HSiO_{0.5}$ and

b. at least one siloxane unit is selected from the group consisting of

and

where the sum of siloxane units in (a) and (b) is equal to at least three siloxane units,

c. any remaining siloxane units being selected from the group consisting of

$R_3SiO_{0.5}$, SiO_2 and $RSiO_{1.5}$

where each siloxane unit of (c) does not exceed three siloxane units,

where R is a monovalent radical selected from the group consisting of hydrocarbon radicals and perfluoroalkylethylene radicals, both having no more than six carbon atoms and R′ is a monovalent hydrocarbon radical having a secondary or tertiary hydroxy substitution and having no more than ten carbon atoms.

B 530,174

FLAME RESISTANT POLYSTYRENE

Louis A. Mango, III, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 6, 1974, Ser. No. 530,174
Int. Cl.² C08F *8/40, 8/24*
U.S. Cl. 260—93.5 A **7 Claims**

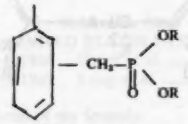
References Cited
UNITED STATES PATENTS

3,008,939	11/1961	Schroeder et al.	260/88.2 S
3,220,989	11/1965	Rolih et al.	260/88.2 S
3,311,602	3/1967	Roley	260/93.5 A

FOREIGN PATENTS OR APPLICATIONS

865,331	4/1961	United Kingdom	450/611

1. A copolymer of styrene and phosphorylated styrene, said copolymer containing phenyl groups and being represented by the formula



where R is an alkyl group having 1–8 carbon atoms of the group consisting of alkyl and at least about 5 wt. pct. phosphorus, said phosphorus being bonded to the phenyl group by an intervening methylene group and said polystyrene copolymer being substantially non-crosslinked.

B 530,925

OXIDATION OF UNSATURATED AMINES

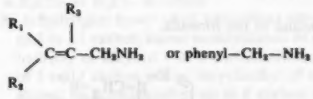
John S. McConaghy, Jr., St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 9, 1974, Ser. No. 530,925
Int. Cl.² C07C *120/00*
U.S. Cl. 260—465.9 **12 Claims**

References Cited
UNITED STATES PATENTS

2,375,015	5/1945	Marple et al.	260/465.9
2,375,016	5/1945	Marple et al.	260/465.9
2,471,927	5/1949	Bortnick et al.	260/465.9
2,849,478	8/1958	Zubay et al.	260/465.9 X
3,719,701	3/1973	Bach	260/465.9

1. A process for the oxidation of an unsaturated amine having the formula



wherein R_1, R_2 and R_3 represent hydrogen or a C_1 to C_4 alkyl group, to the corresponding unsaturated nitrile which comprises reacting the amine with molecular oxygen in the presence of a solution in a nitrogen base which is not oxidized under the reaction conditions of;

a. a cuprous halide and

b. an alcoholic compound having the formula R—OH

wherein R is an alkyl, aryl, alkaryl or aralkyl radical, in a halide to alcohol compound ratio of from 10:1 to 1:100, the reaction taking place at atmospheric or superatmospheric pressures and at a temperature of 0° to 200°C.

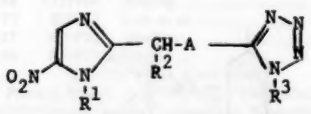
B 532,005
(1-ALKYL-5-NITRO-IMIDAZOLYL-2-ALKYL)-HETEROARYL COMPOUNDS AND PROCESS FOR THEIR MANUFACTURE

Erhardt Winkelmann, Kelkheim, Taunus, and Wolfgang Raether, Dreieichenhain, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 12, 1974, Ser. No. 532,005
Claims priority, application Germany, Dec. 14, 1973, 2362171
Int. Cl.² C07D *257/04*
U.S. Cl. 260—308 D 4 Claims

References Cited
UNITED STATES PATENTS
3,574,195 4/1971 Hajeck ..... 260/308 D X

1. A (1-alkyl-5-nitro-imidazolyl-2-alkyl)-heteroaryl sulfide, sulfoxide or sulfone of the formula



in which R^1 stands for methyl or ethyl, R^2 stands for hydrogen or methyl, R^3 stands for hydrogen, alkyl of 1 to 4 carbon atoms, phenyl, tolyl or chlorophenyl, and A stands for sulfur (—S—), sulfoxide (—SO—) or sulfone ($—SO_2—$).

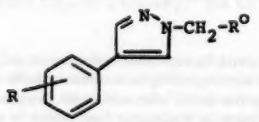
B 535,437
4-PHENYL-1-HYDROXYALKYLPYRAZOLES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Dec. 23, 1974, Ser. No. 535,437
Int. Cl.² C07D *231/12;* A61K *31/415*
U.S. Cl. 260—310 R 10 Claims

References Cited
UNITED STATES PATENTS
2,883,392 4/1959 Karmas et al. ..... 260/310 R
3,043,819 7/1962 Lynn ..... 260/310 R
FOREIGN PATENTS OR APPLICATIONS
1,364,310 7/1963 France ..... 260/310 R

1. A compound of the formula:



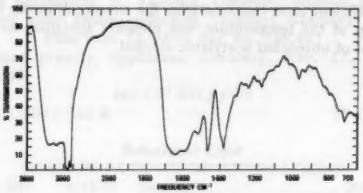
wherein
R^o is hydroxyalkyl of 1 to 5 carbon atoms, and
R is hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or trifluoromethyl,
or a pharmaceutically acceptable acid addition salt thereof.

B 542,226
ANTIBIOTIC U-47,929 AND ITS PREPARATION

Alexander D. Argoudelis; Fritz Reusser, and Howard A. Whaley, all of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 20, 1975, Ser. No. 542,226
Int. Cl.² A61K *35/70*
U.S. Cl. 424—118 8 Claims

References Cited
UNITED STATES PATENTS
3,043,830 7/1962 Haskell et al. 424/118
3,454,696 7/1969 Weinstein et al. 424/118
3,499,078 3/1970 Luedemann et al. 424/118



1. Antibiotic U-47,929, which is active against *S. aureus* and which in its essentially pure form:
a. has the molecular formula $C_{19}H_{34}N_6O_5$;
b. has the following elemental analysis: C, 50.00; H, 7.69; H, 26.92; O, 15.38;
c. has a specific rotation of $[\alpha]_D^{25} = +39°$ (c, 1, water);
d. is soluble in water and lower alcohols, for example, methanol and ethanol; is relatively insoluble in ketones, halogenated or saturated hydrocarbon solvents, ethyl acetate, or other ester-type solvents;
e. has a characteristic infrared adsorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1 of the drawings;
f. has a characteristic NMR spectrum as shown in FIG. 2 of the drawings, or acid addition salts thereof.

2. A process for preparing antibiotic U-47,929, which comprises cultivating *Streptomyces ficellus* Dietz, sp. n., having the identifying characteristics of NRRL 8067, and mutants thereof, in an aqueous nutrient medium under aerobic conditions until substantial antibiotic activity is imparted to said medium.

B 544,476
ELEVATED HUMAN LIPIDS CONTROL

Joseph Diago Pinto, Hollywood Hills, and Raj Kumar, Pembroke Pines, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 27, 1975, Ser. No. 544,476
Int. Cl.² G01N *33/16*
U.S. Cl. 252—408 R 5 Claims

References Cited
UNITED STATES PATENTS
3,736,263 5/1973 Parekh et al. 252/408
3,891,573 6/1975 Stary et al. 252/408

1. The method of making an all human elevated lipid control serum for use as a control in assays for lipids which comprises the steps of:
a. treating normal anticoagulant containing plasma with an ion exchange resin to effect clotting;
b. heating the supernatant plasma at 30° to 40°C. for 15 to 45 minutes to precipitate the clot;
c. dialyzing the recovered serum against polyethylene glycol to concentrate the serum; and

d. adding a 10% to 30% solution of Cohn Fraction III-2,1 in 0.1M, pH 7.0–7.4 phosphate buffer to the dialyzed serum in a proportion which provides a final product having concentrations of lipid components in an elevated range.

3. A human elevated lipid control serum for use as a control in assays for lipids prepared by the method of claim 1.

B 545,299

3,6-DIAMINO-3,4-DIHYDRO-2-PYRIDONES

Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 30, 1975, Ser. No. 545,299

Claims priority, application Germany, Feb. 9, 1974, 2406200

Int. Cl. C07d *213/56*

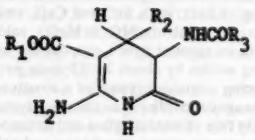
U.S. Cl. 260—295.5 A **10 Claims**

References Cited

UNITED STATES PATENTS

3,860,601	1/1975	Meyer et al.	260/295.5 R
3,862,161	1/1975	Bossert et al.	260/295.5 R

1. A 3,6-diamino-3,4-dihydro-2-pyridone of the formula



wherein

R_1 is straight or branched chain alkyl of 1 to 6 carbon atoms; straight or branched chain alkenyl of 2 to 6 carbon atoms; straight or branched chain alkoxyalkyl of 2 to 6 carbon atoms;

R_2 is straight or branched chain alkyl of 1 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; phenyl unsubstituted or substituted by 1 or 2 of the same or different substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, nitro, cyano, trifluoromethyl, carb(lower alkoxy) of 1 to 4 carbon atoms in the alkoxy portion and SO_n-(lower alkyl) in which alkyl contains 1 to 4 carbon atoms and *n* is 0 or 2; naphthyl; and

R_3 is straight or branched chain alkyl of 1 to 6 carbon atoms; or phenyl unsubstituted or substituted by methyl, ethyl, methoxy, ethoxy, nitro, trifluoromethyl or chloro or bromo.

B 547,208

PENICILLINS

Gunter Schmidt, and Karl Georg Metzger, both of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 419,950, Nov. 29, 1973. This application Feb. 5, 1975, Ser. No. 547,208

Claims priority, application Germany, Dec. 8, 1972, 2260118

Int. Cl.[2] C07D *499/68, 499/70*

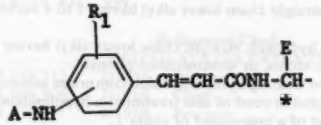
U.S. Cl. 260—239.1 **16 Claims**

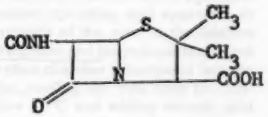
References Cited

UNITED STATES PATENTS

3,268,513	8/1966	Grant et al.	260/239.1
3,433,784	3/1969	Long et al.	260/239.1

1. A compound of the formula:





or a pharmaceutically acceptable nontoxic salt thereof wherein

the carbon atom designated by * is asymmetrically substituted;

R_1 is hydrogen, halo, lower alkyl, hydroxy, nitro or A—NH—;

A is R_3CO- or R_4CS- in which

R_3 is hydrogen; lower alkyl; halo(lower alkyl); cycloalkyl of 3 to 11 carbon atoms unsubstituted or substituted by hydroxy or alkyl of 1 or 2 carbon atoms; cycloalkenyl of 3 to 11 carbon atoms; bicycloalkyl of up to 8 carbon atoms; bicycloalkenyl of up to 8 carbon atoms; aryl of 6 to 10 carbon atoms, unsubstituted or substituted by from 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, nitro, amino and alkylsulfonyl of 1 to 4 carbon atoms, or substituted by methylenedioxy; azidoaryl of 6 to 10 carbon atoms; azido(lower alkyl; amino; or thienyl; and

R_4 is lower alkylamino or arylamino of 6 to 10 carbon atoms; and

E is phenyl; phenyl substituted by hydroxy, azido, lower alkyl, lower alkoxy, lower alkylthio or chloro; or thienyl.

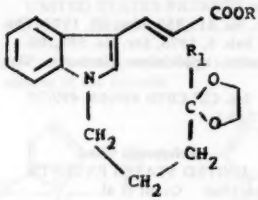
B 547,547

1-DIOXOLANYLPROPYL-3-INDOLEACRYLIC ACID ESTERS

Marcel K. Eberle, Madison, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Feb. 6, 1975, Ser. No. 547,547
Int. Cl.² C07D *209/18*
U.S. Cl. 424—274 6 Claims

1. A compound of the formula



where

R represents straight chain lower alkyl having 1 to 4 carbon atoms, and

R_1 represents hydrogen, straight chain lower alkyl having 1 to 4 carbon atoms, or unsubstituted phenyl.

6. A method of treating lipidemia which comprises administering to a mammal in need of said treatment a hypolipidemic effective amount of a compound of claim 1.

B 554,039

DETECTION OF BREAST CANCER

Norman Grosser, 1745 Cedar Ave., Apt. No. 210, Montreal, Quebec, and David Marshall Parks Thomson, 137 Wicksteed, Mount Royal, Quebec, both of Canada

Filed Feb. 28, 1975, Ser. No. 554,039
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B 4 Claims

References Cited
UNITED STATES PATENTS

3,594,466	7/1971	Guffroy	424/12
3,663,684	5/1972	Freedman	424/12 X
3,840,655	10/1974	Lerner	424/12
3,852,415	12/1974	Vandervoorde	424/12 X
3,867,363	2/1975	Hansen	424/12 X

OTHER PUBLICATIONS

Chemical Abstracts, 77:99494p (1972).

1. A method for detecting the presence of breast cancer in humans which comprises incubating a measured amount of a patient's blood leukocytes with aqueous basic extracts of human breast tumor, then determining the leukocytes non-adherence index by comparison to a non-specific antigen control, and concluding that breast cancer is present if the non-adherence index of the patient being tested is higher than the control non-adherence index.

B 554,655

CERAMIC ARTICLES HAVING CORDIERITE COATINGS

Francis W. Martin, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 3, 1975, Ser. No. 554,655
Int. Cl.² C03C *3/22, 12/00*
U.S. Cl. 428—428 10 Claims

References Cited
UNITED STATES PATENTS

3,024,303	3/1962	Smothers et al.	427/95 X
3,084,053	4/1963	Arlett et al.	106/39.6 X
3,275,493	9/1966	MacDowell	106/39.6
3,450,546	6/1969	Stong	106/39.6
3,673,049	6/1972	Giffen et al.	428/428
3,883,337	5/1975	Hengesson et al.	65/33 X

OTHER PUBLICATIONS

Karkhanavala, M. D. et al. – "The Polymorphism of Cordierite" J. Am. Cer. Soc. 36(12) pp. 389–392.

MacMillan, P. W. – *Glass–Ceramics* (1964) Academic Press New York – pp. 116–117, 134, 164–165.

1. A ceramic article having on at least a portion of the surface thereof a non-porous sintered cordierite glass-ceramic coating, wherein

a. said coating has an oxide composition consisting essentially, in mole percent, of about 22.2–26 mole percent MgO, 23.6–27.8 mole percent Al_2O_3, 44.3–52.7 mole percent SiO_2, 0.7–5.6 mole percent MO, wherein MO is one or more modifying oxides selected from the group consisting of BaO, PbO, SrO and CaO, and at least 23.6 mole percent total of (MO + MgO), said Al_2O_3 being present in an amount which exceeds the amount of said modifying oxides by about 21–23 mole percent,

b. said coating contains crystals of a structure corresponding to hexagonal cordierite as the sole crystal phase, being essentially free of residual glass and the secondary crystal phases magnesia quartz, sapphirine and celsian; and

c. said coating is provided by heating a glass powder coating having said oxide composition at a temperature in the range of about 900°–1050°C. for a time sufficient to obtain the sintering and crystallization thereof.

5. A glass-ceramic article having on at least a portion of the surface thereof a nonporous, sintered cordierite glass-ceramic coating, wherein

a. said coating has an oxide composition consisting essentially in mole percent, of about 22.2–26 mole percent MgO, 23.6–27.8 mole percent Al_2O_3, 44.3–52.7 mole percent SiO_2, 0.7–5.6 mole percent MO, wherein MO is one or more modifying oxides selected from the group consisting of BaO, PbO, SrO, and CaO, and at least 23.6 mole percent total of (MO + MgO), said Al_2O_3 being present in an amount which exceeds the amount of said modifying oxides by about 21–23 mole percent,

b. said coating contains crystals of a structure corresponding to hexagonal cordierite as the sole crystal phase, being essentially free of residual glass and the secondary crystal phases magnesia quartz, sapphirine and celsian; and

c. said coating is provided by heating a glass powder coating having said oxide composition at a temperature in the range of about 900°–1050°C. for a time sufficient to obtain the sintering and crystallization thereof.

B 554,848

3,4-DIMETHYL-5-ISOXAZOLYLSULFAMYLANILINE

Daniel Tim-Wo Chu, Greenfield Park, and David Lyon Garmaise, Montreal, both of Canada, assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 378,305, July 11, 1973, Pat. No. 3,894,061. This application Mar. 3, 1975, Ser. No. 554,848

Int. Cl.² C07D *261/16*

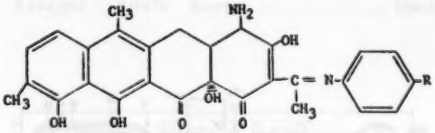
U.S. Cl. 260—307 H **2 Claims**

References Cited

UNITED STATES PATENTS

3,671,539	6/1972	Saucy	260/307 H
3,689,498	9/1972	Lumgruber et al.	260/307 H

1. A compound of the formula:



wherein R is 4-dimethyl-5-isoxazolylsulfamyl or the corresponding tautomeric form or a pharmaceutically acceptable acid addition salt thereof.

B 569,125

SYNERGISTIC ANTIOXIDANT COMPOSITION COMPRISING ASCORBIC ACID AND 6-HYDROXY-2,5,7,8-TETRAMETHYLCHROMAN-2-CARBOXYLIC ACID

Winifred Cort, Little Falls, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 465,217, April 29, 1974, Pat. No. 3,803,317. This application Apr. 17, 1975, Ser. No. 569,125

Int. Cl.² A23D *5/04*; C09K *15/06*; C07D *259/00*

U.S. Cl. 252—404 **2 Claims**

References Cited

UNITED STATES PATENTS

2,511,428	6/1950	Buxton	426/228
3,313,826	4/1967	Gale	426/228
3,364,234	1/1968	Schoenewaldt	426/328
3,502,594	3/1970	Ahrens	260/398.5

FOREIGN PATENTS OR APPLICATIONS

45-29413	9/1970	Japan	426/183
949,715	2/1964	United Kingdom	260/345.5

1. A synergistic antioxidant composition consisting essentially of from about one part by weight to about 20 parts by weight of ascorbic acid per part by weight of rac. 6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid.

B 572,726

TARTAR REMOVAL BY ELECTRODIALYSIS AND POTASSIUM LEVEL CONTROL IN WINE

Taro Nagasawa; Mamoru Tomita; Yoshitaka Tamura, and Teruhiko Mizota, all of Tokyo, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1975, Ser. No. 572,726

Int. Cl.² A27D *6/00*

U.S. Cl. 426—239 **10 Claims**

References Cited

UNITED STATES PATENTS

2,754,212	7/1956	Wiseman	426/271
3,369,906	2/1968	Chen	204/180 P
3,437,491	4/1969	Peterson	426/271
3,865,960	2/1975	Wucherpfennig	426/239
3,865,961	2/1975	Wucherpfennig	426/239

1. A method of treating wine, which comprises: introducing crude wine to both the dilution and concentration chambers of an electrodialysis apparatus; operating said apparatus so that the potassium concentration of the wine in the dilution chamber falls to below 500 mg/liter and the potassium content of the wine in the concentration chamber is increased into the range 1000 to 2000 mg/liter; cooling the wine from the concentration chamber to below 10°C and adding tartaric acid crystals to said wine in order to adjust the pH into the range 2.8 to 3.2 thereby precipitating tartar; separating the tartar from the wine and admixing said wine with wine emerging from the dilution chamber of the electrodialysis apparatus in a ratio such that the potassium content of the resulting mixture is below 500 mg/liter.

B 384,654

METHOD AND MEANS FOR CONTROLLING POPULATION INVERSION AND ELECTRONICALLY SCANNING SOLID STATE LASER OUTPUT DEFLECTIONS

Robert D. Haun, Jr., Pittsburgh, and John D. Feichtner, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 1, 1973, Ser. No. 384,654

Int. Cl.[2] H01S *3/10, 3/094*

U.S. Cl. 331—94.5 M **12 Claims**

References Cited

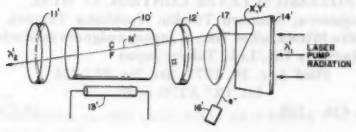
UNITED STATES PATENTS

3,178,657	4/1965	Morse	331/94.5
3,292,103	12/1966	Soules et al.	331/94.5
3,439,169	4/1969	Lynch	331/94.5
3,774,121	11/1973	Ashkin et al.	331/94.5

OTHER PUBLICATIONS

Birnbaum et al., Proceedings of the IEEE, June 1968, pp. 1096–1097.

Dienes et al., IEEE J. Quantum Electronics, Vol. 8, No. 3.



1. A method for controlling the spatial and temporal output of a laser oscillator, said method comprising:

directing a broad area pump laser beam through an end reflector of said oscillator into the laser medium to pump a substantial portion of the height and breadth of said medium for raising said laser above its oscillation threshold,

positioning a spatial and temporal modulator between said oscillator and said pump laser,

varying the transmission of the modulator to vary the transmission of the pump laser beam at selected small portions of the beam's cross section for selectively varying the cross sectional portion of said laser medium which is raised above its oscillation threshold by said pump laser beam.

B 420,472

INTEGRATED CIRCUIT STRUCTURE HAVING A PLURALITY OF SEPARABLE CIRCUITS

Theodore H. Baker; Majid Ghafghaichi; Richard C. Stevens, all of Poughkeepsie, and Daniel Tuman, Beacon, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 364,791, May 29, 1973, Pat. No. 3,801,905, which is a division of Ser. No. 129,500, March 30, 1971. This application Nov. 30, 1973, Ser. No. 420,472

Int. Cl.[2] H01L *19/00*

U.S. Cl. 317—101 A **4 Claims**

References Cited

UNITED STATES PATENTS

3,303,400	2/1967	Allison	317/101 A
3,539,876	11/1970	Feinberg et al.	317/101 A
3,553,830	1/1971	Jenny et al.	317/101 A
3,689,803	9/1972	Baker et al.	317/101 A

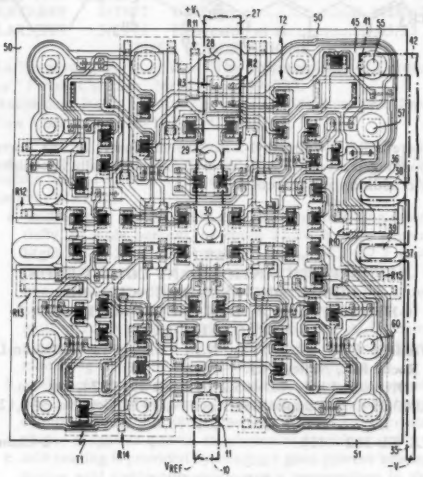
1. An integrated circuit structure comprising

a plurality of separable circuits, at least one of said separable circuits being functional and at least one of said separable circuits being defective, each of said separable circuits comprising an interconnected plurality of regions of different conductivity types, and each of said separable circuits requiring the application of two voltage levels in order to be operable,

at least one voltage supply for applying one of said voltage levels connected to all of said separable circuits by interconnections common to all of said separable circuits,

an additional voltage supply providing the other of said voltage levels,

receiving and distributing means in each of said separable circuits for receiving and distributing said other voltage level, said receiving and distributing means in each circuit being independent of each other,



connecting means connecting said additional voltage supply to said receiving and distributing means of only the functional separable circuits to thereby provide said other voltage level required in order for said functional separable circuits to be operable, and

at least one common region of one-type conductivity extending between all of said separable circuits and connected to said additional voltage supply,

said receiving and distributing means in each of said defective separable circuits not connected to said additional voltage supply being free of short-circuits to said common region, and thereby completely electrically isolated from said common region.

B 458,500

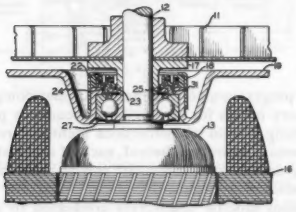
RESILIENT ELECTRIC MOTOR BEARING SEAL

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Apr. 8, 1974, Ser. No. 458,500
Int. Cl.² F16C 33/78; F16J 15/32, 15/52; H02K 5/16
U.S. Cl. 310—90 11 Claims

References Cited
UNITED STATES PATENTS

1,370,803	3/1921	Fesler	308/36.1
2,783,067	2/1957	Foss	308/36.1
2,905,267	9/1959	Thompson	55/363
3,062,939	11/1962	Kiespe et al.	74/18.1
3,141,708	7/1964	Evangelista	308/36.1
3,243,617	3/1966	Cunningham	310/63
3,250,579	5/1966	Tupper et al.	308/127
3,499,654	3/1970	Lower	277/82
3,785,660	1/1974	Bush	277/134
3,788,650	1/1974	Place	277/38
3,788,653	1/1974	Sigmon	277/70
3,794,392	2/1974	Scott	308/36.1



1. A dynamoelectric machine comprising a rotating member, rotatable structure including a shaft extending axially through the rotating member, a stator and coil winding assembly having a bore for receiving the rotating member, an enclosure containing the stator and coil winding assembly, and an end shield through which the shaft extends, the dynamoelectric machine further comprising:

at least one bearing mounted to support the shaft for rotation;

a seal engaging member mounted on the shaft; and

a sealing member formed of a resilient material accommodated in a predetermined position relative to the seal engaging member and the end shield; the sealing member having a circumferentially extending wall defining an opening, the opening accommodating at least part of the rotatable structure with a radial clearance; the sealing member further having at least one sinuous in shape portion and a contact surface oriented crosswise relative to the shaft, with the contact surface effectively making mutual mating contact with the seal engaging member and with the sinuous in shape portion of the sealing member urging the contact surface thereof into effective mating contact between the contact surface of the seal and the seal engaging member even when the seal engaging member rotates in a misaligned manner.

B 466,390

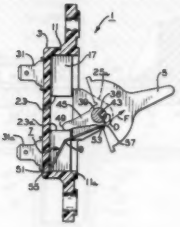
ELECTRICAL SWITCH

Dann W. Denny, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 2, 1974, Ser. No. 466,390
Int. Cl.² H01H 19/14
U.S. Cl. 200—339 15 Claims

References Cited
UNITED STATES PATENTS

2,599,437	6/1952	Dickson	200/67 DB
3,067,301	12/1962	Yamamoto	200/67 DB
3,519,775	7/1970	Weremy	200/153 K
3,668,353	6/1972	Raab	200/153 K
3,694,607	9/1972	Fontana	200/339
3,749,872	7/1973	Foster	200/159 A X
3,763,341	10/1973	Willis	200/67 DB X



1. An electrical switch comprising a housing, means for controlling a circuit through the housing and operable generally between circuit making and breaking positions, means electrically disassociated from the controlling means and adapted to be selectively momentarily movable in the housing for operating the controlling means, and means for yielding generally as a collapsible column to oppose the selective momentary movement of the operating means including a pair of generally opposite portions respectively mounted between the housing and the operating means to bias the operating means against the controlling means urging it toward one of its circuit making and breaking positions, and a permanent bend in the yielding means for determining the magnitude range of the compressive force of the yielding means in opposition to a momentarily applied force on the operating means to effect the selective momentary movement thereof against the yielding means, and the controlling means assuming the other of its circuit making and breaking positions upon the selective momentary movement of the operating means against the compressive force of the yielding means.

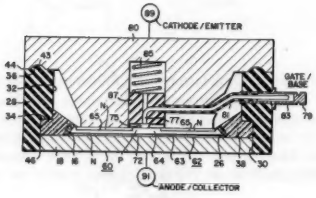
B 481,930
HOUSING FOR A COMPRESSION BONDED ENCAPSULATION OF A SEMICONDUCTOR DEVICE

Leslie R. Rice, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 21, 1974, Ser. No. 481,930
Int. Cl.² H01L 23/28
U.S. Cl. 357—72 3 Claims

References Cited
UNITED STATES PATENTS

3,450,962	6/1969	Ferree et al.	357/79
3,499,095	3/1970	Haus	357/74
3,515,955	6/1970	Butenschon	357/74
3,548,267	12/1970	Siddell	357/74
3,559,001	1/1971	Cooper et al.	357/79
3,597,524	8/1971	Schreiner	357/79
3,686,542	8/1972	Rindner et al.	357/79
3,721,867	3/1973	Schierz	357/79
3,837,000	9/1974	Platzoeder et al.	357/79



1. A semiconductor device, said semiconductor device comprising:

a. a fusion element, said fusion element comprising a wafer of semiconductor material, said wafer having top and bottom major opposed flat parallel surfaces, an upper metal electrode affixed to said top surface of said wafer, a lower metal electrode affixed to said bottom surface of said wafer, siad lower metal electrode being cylindrical in shape with flat top and bottom surfaces and extending beyond the periphery of said wafer of semiconductor material to which it is affixed, means coating and protecting the edge of said wafer of semiconductor material;

b. a flexible electrical insulating sleeve member having at least one cylindrical shaped inside wall elastically held against the cylindrical shaped edge of said lower electrode, said sleeve member extending from a point above said upper metal electrode to a point flush with said bottom surface of said lower metal electrode;

c. an elastomeric material disposed in the cavity formed by the inside wall of the insulating sleeve member and the edges of the fusion element;

d. a metal pole piece contact adjoined to the upper end of the sleeve member and having a projection extending into the sleeve and making electrical contact with the fusion element.

B 485,575
PROGRAMMABLE SEQUENCE CONTROLLER

Hisaji Nakao, Toyota; Yasufumi Tokura; Toshihiko Yomogida, both of Kariya, and Kazuo Matsuura, Chiryu, all of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of, Japan

Filed July 3, 1974, Ser. No. 485,575
Claims priority, application Japan, Apr. 19, 1974, 49-44626; Apr. 19, 1974, 49-44627
Int. Cl.² G05B 11/32
U.S. Cl. 340—172.5 7 Claims

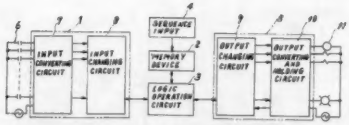
References Cited
UNITED STATES PATENTS

3,686,639	8/1972	Fletcher et al.	340/172.5
3,753,243	8/1973	Ricketts, Jr. et al.	340/172.5
3,806,714	4/1974	Otsuka et al.	235/152
3,810,118	5/1974	Kiffmeyer	340/172.5
3,849,765	11/1974	Hamano	340/172.5

OTHER PUBLICATIONS

G. Lapidus, "Programmable Logic Controllers—Painless Programming to Replace the Relay Bank," *Control Engineering*, Apr. 1971, pp. 49–60.

N. Andreieu, "Programmable Logic Controllers—An Update," *Control Engineering*, Sept. 1972, pp. 45–47.



1. A programmable sequence controller comprising:

memory means for memorizing a sequence program comprising a train of instructions identified respectively by memory addresses thereof, each of said instructions having an examine command and an address information therein;

an input module operatively connected to a plurality of addressed external input devices for converting states of said external input devices into logical values;

an output module operatively connected to a plurality of addressed external output devices to be energized or deenergized;

a logic operation circuit operatively connected to said memory means and to said input and output modules;

reading means for reading out and feeding said train of instructions from said memory means to said logic operation circuit;

said logic operation circuit comprising:

circuit means for examining a logical value of one of said external input devices specified by the address information of one of said instructions with one examine command of said one of said instructions read out by said reading means;

second memory means for temporarily memorizing an examined result of said circuit means;

said output module being operable to energize or deenergize one of said addressed external output devices in response to an output of said second memory means; and

discontinuance means operatively connected to said second memory means for causing said circuit means to discontinue a next examination of a logical value of another of said external input devices specified by the address information of another of said instructions with another examine command of said another of said instructions read out by said reading means to execute a logic operation nonsequentially when said second memory means memorizes satisfaction of the preceding examination of the logical value of said one of said external input devices with said one examine command of a logical OR function or un-

satisfaction of the preceding examination of the logical value of said one of said external input devices with said one examine command of a logical AND function.

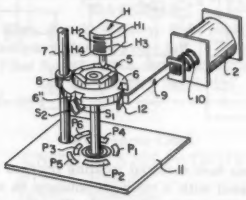
B 487,411
TWO-CHANNEL AND FOUR-CHANNEL CARTRIDGE TAPE PLAYER

Motoshi Nishinakagawa, Iwaki, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed July 10, 1974, Ser. No. 487,411
Int. Cl.² G11B *21/08, 23/04, 5/54, 5/56*
U.S. Cl. 360—78 **4 Claims**

References Cited
UNITED STATES PATENTS

3,492,005	1/1970	Ueno et al.	360/78
3,532,347	10/1970	Parsons	360/106
3,592,476	7/1971	MacDonald	360/78
3,601,409	8/1971	Marshall	360/106
3,730,532	5/1973	Miyamoto	360/106
3,839,737	10/1974	Vogel	360/106
3,846,838	11/1974	Okamoto	360/106
3,869,717	3/1975	Kawada	360/106
B350,589	1/1975	Tozawa	360/78



1. A cartridge-type tape player adapted to receive and play two-channel and four-channel tape cartridges, and having amplifier means and output means connected to said amplifier means for receiving signals therefrom for audible reproduction thereof, said player including in combination:

changeover switch means operable between a first position when a two-channel tape cartridge is inserted into the player and a second position when a four-channel tape cartridge is inserted into the player,

magnetic tape head means having four magnetic pick-up areas, said tape head means being movable upon the insertion of two-channel and four-channel tape cartridges to align said pick up areas with selected tracks on the tape,

head shifting means mounted in said player and movable between first, second, third and fourth positions, said head shifting means being engageable with said magnetic tape head means to move the same to align said pickup areas with selected tracks on the tape, said head shifting means includes a rotatable disc having a top and a bottom surface thereon and having a plurality of notches on the peripheral edge thereof, said top surface having four successive cam regions thereon which correspond to the four-channel tape tracks and said bottom surface having a pair of contacts mounted thereto and selectively engageable with said rotary switch means,

drive means coupled to said head shifting means for rotating said head shifting means between said first, second, third and fourth positions, said drive means further includes a coupling member engageable with and driven by the capstan drive and positioned in a spaced relation for engagement with said rotatable disc to cause the same to be rotated by the coupling member, a solenoid, a lever adapted to engage a notch on the rotatable disc and magnetic linkage means coupled to the said lever, said solenoid operating to move said magnetic linkage means to cause said lever to engage said rotatable disc to move the same whereby said rotatable disc is engaged and rotated by the coupling on the capstan drive shaft to thereby position said pick-up areas on said magnetic tape head means with selected tracks on the tape,

rotary switch means including a first switch portion and a second switch portion, means coupling said second switch portion to said drive means for actuating the same to move said head shifting means, and

said drive means being responsive to operation of said second portion of said switch means to rotate said head shifting means between said first, second, third and fourth positions when said changeover switch means is in said first position and responsive to operation of said second switch portion of said rotary switch means to rotate said head shifting means to successive positions when said changeover switch means is in said second position.

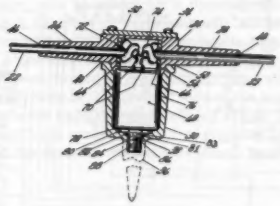
B 492,902
FLUID-TIGHT ENCLOSURE FOR GEOPHONE AND CABLE

William O. McNeel, Houston, Tex., assignor to GEO Space Corporation, Houston, Tex.

Filed July 29, 1974, Ser. No. 492,902
Int. Cl.² G01V *1/16*
U.S. Cl. 174—52 R **17 Claims**

References Cited
UNITED STATES PATENTS

1,974,297	9/1934	Benander	339/106 X
2,908,890	10/1959	Campbell	340/17
3,119,978	1/1964	Sears	174/154 X
3,445,809	5/1969	McLoad	340/17



1. A fluid-tight enclosure adapted to encase a geophone electrically connected to a cable comprising

a housing means having an open end and inner walls defining a cavity adapted to receive a said geophone;

a flexible sealing means positioned in the open end of said housing and having a hollowed out central area and cable entry means adapted to have a said cable extended therethrough into the hollowed out central area to be electrically connected to a said geophone, said flexible sealing means having a resilient sealing edge located on the surface of the flexible sealing means for forming a fluid-tight sealing engagement with said housing means;

a stress ring having a relatively thin outer wall and a pair of aligned opposing holes extending through said thin outer wall, said stress ring being positioned within the hollowed out central area of said flexible sealing means and having the opposing holes thereof in alignment with the cable entry means enabling a said cable to extend therethrough into the hollowed out central area, said stress ring having an inner diameter to enclose a knot-anchored takeout formed in said cable and to support a knot-anchored takeout and a cable in a substantially fixed position thereagainst to prevent withdrawal of a said cable from said stress ring through said flexible sealing means;

insulating means positioned in engagement with the inner walls of said housing means to electrically insulate the housing means from the exterior of a said geophone; and

means clamping said flexible sealing means into intimate fluid-tight contact with said housing means and fluid-tight contact between the cable entry means and a said cable extending therethrough forming a pressured fluid-tight seal between said flexible sealing means and said housing means and between the outer periphery of said sealing means and said cable and for urging said stress ring against a said geophone to prevent movement thereof in the cavity of said housing means.

B 504,404

ZENER DIODE EFFECT ON LONG ACCELERATION MODULE

Wardell Gary, and Glenn R. Taylor, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

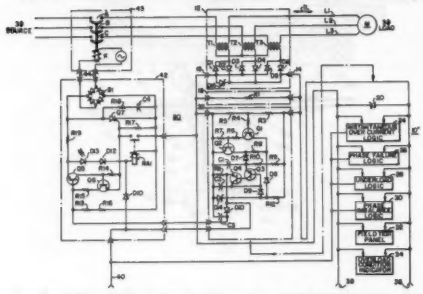
Filed Sept. 9, 1974, Ser. No. 504,404
Int. Cl.² H02H 7/08, 3/10
U.S. Cl. 317—36 TD **5 Claims**

References Cited
UNITED STATES PATENTS

3,602,783	8/1971	Engle	317/36 TD
3,792,313	2/1974	Conrad	317/36 TD
3,818,275	6/1974	Shimp	317/36 TD

OTHER PUBLICATIONS

"Improved Static Over–current Relay with I.D.M.T. Characteristic;" by S. C. Gupta, Dr. T. S. M. Rao; IE(I) Journal EL, pp. 138–140, 2–73.



1. An electrical circuit protecting device, comprising:

sensor means for sensing circuit current in an electrical circuit, said sensor means having an output for providing an output current related to said circuit current;

inverse time overload means having an input which is connected to said output of said sensor means, said overload means providing a trip signal for a circuit breaker trip means, said latter signal being provided at a time which is inversely proportional to the magnitude of said electrical circuit current after said electrical circuit current is sensed and provided said magnitude of said electrical current persists for a predetermined period of time;

long acceleration corrective means connected in parallel circuit relationship with said inverse time means input for overriding said inverse time overload means and preventing the provision of said signal for said circuit breaker means for a fixed period of time regardless of said magnitude of said circuit current once said magnitude of said circuit current attains a predetermined value; and

circuit breaker trip means connected to said inverse time overload means for opening said electrical circuit when said trip signal is provided.

B 520,075

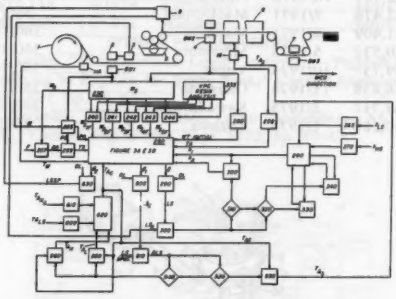
METHOD AND APPARATUS FOR CONTROLLING A MATERIAL TREATER

Charles Robert Fay, Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

Filed Nov. 1, 1974, Ser. No. 520,075
Int. Cl.² G06G 7/58
U.S. Cl. 235—151.1 **12 Claims**

References Cited
UNITED STATES PATENTS

3,073,153	1/1963	Petitjean	73/73
3,260,642	7/1966	Canter, Jr.	162/252
3,378,676	4/1968	Clement	235/151.3
3,596,071	7/1971	Doering	235/151.35 X



8. In a fibrous host material treating process wherein said material is treated with a resinous solution in a treater and dried in a dryer, apparatus for controlling the drying of said treated material comprising

1. first gauge means adjacent to said material for measuring the weight of said material before treating and providing a signal (A) representative of said weight before treating,
2. second gauge means mounted before said dryer and adjacent to said material for measuring the treated, undried weight of said material and providing a signal (B) representative of said treated, undried weight,
3. third gauge means mounted after said dryer and adjacent to said material for measuring the dried weight of said material and providing a signal (C) representative of said dried weight,
4. means for providing a signal (D) representative of the resin solids fraction of said resinous solution,
5. means responsive to said signals (A), (B), (C) and (D) for computing the actual percent volatiles of the dried, treated material and providing a signal (E) representative of said percent volatiles,
6. means for providing a signal (F) representative of the specification percent volatiles of said dried, treated material,
7. means for providing a signal (G) representative of the solvent component percentages and a signal (H) representative of heat of vaporization of each solvent component of said resinous solution,
8. means for measuring the line speed of said material and providing a signal (I) representative of said line speed,
9. means for providing a signal (J) representative of the dryer length,
10. means for measuring the temperature of said dryer and providing a signal (K) representative of said temperature,
11. means for providing a signal (L) representative of the heat capacity of the host material,
12. means for measuring the temperature of said host material before treating and providing a signal (M) representative of said temperature before treating,

13. means responsive to said signals (A), (B), (C), (D), (E), (G), (H), (I), (J), (K), (L) and (M) for computing the actual film coefficient of the material undergoing drying and providing a signal (N) representative of the actual film coefficient,

14. means for providing a signal (O) representative of the specification line speed of said host material,

15. means responsive to said signals (A), (B), (D), (F), (G), (H), (J), (L), (M), (N) and (O) for computing the temperature needed in the dryer to achieve said specification percent volatiles at said specification line speed and providing a signal (P) representative of said needed temperature,

16. means responsive to said signal (P) for controlling the dryer temperature,

17. means responsive to said signals (A), (B), (D), (F), (G), (H), (J), (K), (L), (M) and (N) for computing the line speed necessary to achieve said specification percent volatiles in accordance with said signal (K) and providing a signal (Q) representative of said necessary line speed and

18. means responsive to said signal (Q) for controlling said line speed.

B 521,044

STATOR ASSEMBLY FORMED OF FLAT, STRIP MATERIAL

Marion W. Sims, South Whitley, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 5, 1974, Ser. No. 521,044

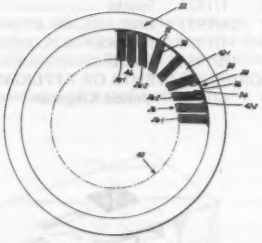
Int. Cl.² H02K *1/06, 1/12*

U.S. Cl. 310—259 **9 Claims**

References Cited

UNITED STATES PATENTS

1,255,606	2/1918	Hensley	310/216 X
2,236,291	3/1941	Kilbourne	310/218
2,351,316	6/1944	Borden	310/216 X
2,516,140	7/1950	Nahman	310/216 X
2,913,603	11/1959	Carlson	310/218 X
3,064,147	11/1962	Porter et al.	310/216 X
3,339,132	8/1967	Schafft	310/216 X
3,591,819	7/1971	Laing	310/217



1. A stator assembly for a dynamoelectric machine comprising a yoke member formed of a continuous strip of ferro-magnetic material and having an inner surface facing toward a bore; a plurality of spaced teeth extending generally axially along and inwardly from the inner surface and having inner ends defining the bore, each of the teeth having a plurality of generally axially and inwardly extending ferro-magnetic flat segments; and connecting portions respectively positioned between adjacent ones of the teeth, each of the connecting portions including a pair of leg elements respectively forming parts of the adjacent teeth, and a bight portion between the leg elements and disposed adjacent the bore; the teeth and connecting portions providing a plurality of coil winding slots open adjacent the yoke.

B 521,045

WIRE STATOR CORE STRUCTURE AND METHOD OF MAKING SAME

Marion W. Sims, South Whitley, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 5, 1974, Ser. No. 521,045

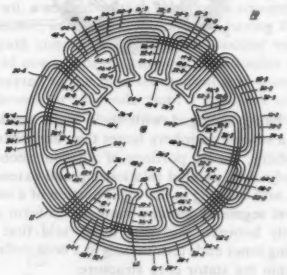
Int. Cl.² H02K *1/06, 1/12*

U.S. Cl. 310—254 **18 Claims**

References Cited

UNITED STATES PATENTS

794,998	7/1905	Mott	310/216 X
1,255,606	2/1918	Hensley	310/216 X
1,255,607	2/1918	Hensely	310/217 X
2,913,603	11/1959	Carlson	310/218 X
3,064,147	11/1962	Porter et al.	310/218 X
3,339,132	8/1967	Schafft	310/216 X
3,591,819	7/1971	Laing	310/217



1. A stator core structure for a dynamo-electric machine comprising a filament of ferro-magnetic material generally spirally disposed in at least one generally planar layer and including a plurality of spaced apart teeth in the layer each respectively constituted by a plurality of generally contiguous open loop portions of the filament, one of the loop portions in each of the teeth having an end defining at least in part a bore in the stator core structure, and a plurality of connecting portions of the filament respectively joined between the loop portions.

B 521,046

SEGMENTED STATOR CORE STRUCTURE AND METHOD FOR MAKING SAME

Marion W. Sims, South Whitley, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 5, 1974, Ser. No. 521,046

Int. Cl.² H02K *1/12*

U.S. Cl. 310—254 **16 Claims**

References Cited

UNITED STATES PATENTS

794,998	7/1905	Mott	310/216 X
1,255,606	2/1918	Hensley	310/216 X
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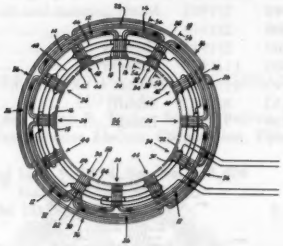
1,946,468	2/1934	Bindschedler	310/216 X
2,487,692	11/1949	Brouwer	310/216
2,503,092	4/1950	Brouwer	310/216
3,591,819	7/1961	Laing	310/217

1. A stator core structure for a dynamoelectric machine comprising a first plurality of generally U-shaped segments each having a bight portion and a pair of leg portions, each of said first segments being formed of at least one flat strip of ferro-magnetic material, the bight portions of each of said first segments having an opening formed therethrough intermediate its leg portions, said first segments being arranged with

said bight portions thereof forming a first periphery and with said leg portions thereof extending radially, the leg portions of adjacent first segments being in adjacent, parallel relationship mutually to form first teeth, and at least a second plurality of generally U-shaped segments equal in number to said first segments and each having a bight portion and a pair of leg portions, each of said second segments being formed of at least one flat strip of ferro-magnetic material, said second



segments being arranged with their bight portions forming generally a second periphery larger than and coaxial with said first periphery, the leg portions of adjacent second segments being in adjacent, parallel relationship and extending radially through a said opening in the bight portion of a respective one of said first segments thereby mutually to form second teeth respectively between said first teeth, said first and second teeth having inner ends terminating in a bore defining configuration within the stator core structure.

B 526,289

POLYPHASE DISC RELUCTANCE MOTOR

Theodore M. Heinrich, Murrysville, and Bhate, Suresh K., Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 22, 1974, Ser. No. 526,289

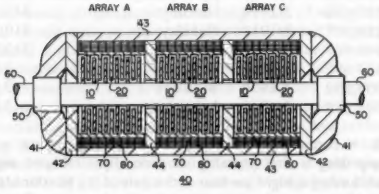
Int. Cl.[2] H02K *17/42*

U.S. Cl. 310—168 **12 Claims**

References Cited

UNITED STATES PATENTS

3,230,406	1/1966	Henry et al.	310/268 X
3,327,191	6/1967	Goto	310/49 X
3,343,014	9/1967	Giles	310/49
3,401,284	9/1968	French	310/168
3,401,284	9/1968	French	310/268 X
3,401,323	9/1968	French	318/138
3,411,059	11/1968	Kaiwa	310/49 X
3,437,854	4/1969	Oiso	310/49
3,549,918	12/1970	Croymans	310/49
3,700,944	10/1972	Heintz	310/168



1. A polyphase variable reluctance dynamoelectric machine comprising:

a frame;

a shaft mounted for rotation within said frame;

a group of K rotor-stator arrays supported in tandem within said frame, K being a positive integer greater than 2, said group comprising a first array, a last array, and an array intermediate of said first and last arrays;

each of said rotor-stator arrays comprising one or more axially spaced stator discs secured to said frame and one or more axially spaced rotor discs secured to said shaft, said rotor and stator discs being arranged in interleaved relation one with another and spaced apart to define an axial air gap therebetween;

each of said rotor and stator discs comprising a plurality of magnetic and non-magnetic segments, a non-magnetic segment being disposed intermediate of two of said magnetic segments, said magnetic and non-magnetic segments having a pitch of ρ mechanical radians;

corresponding magnetic segments of adjacent stator discs being disposed in alignment with each other within each array and in alignment with corresponding magnetic segments of said stator discs contained within adjacent arrays; and

corresponding magnetic segments of adjacent rotor discs being disposed in alignment with each other within each array, the magnetic segments of said rotor discs contained within the N^{th} array being angularly displaced by $(N-1)\text{-}(2/K)\rho$ mechanical radians with respect to corresponding magnetic segments of the rotor discs contained within said first array, N being a positive integer from the set of integers $(1,2,\ldots,K)$, $N=1$ referring to said first array and $N=K$ referring to said last array.

B 559,111

ONE-PIECE LIGHT CONE BAFFLE

Dana Whitney Wolcott, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 17, 1975, Ser. No. 559,111

Int. Cl.[2] G03B *17/02*

U.S. Cl. 354—288 **7 Claims**

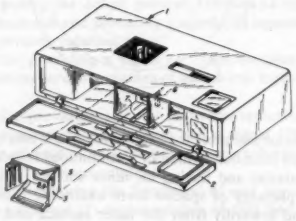
References Cited

UNITED STATES PATENTS

259,064	6/1882	Walker	354/174
993,047	5/1911	Folmer	354/288 X
1,291,405	1/1919	Champeau	354/188
1,479,112	1/1924	Sparks	354/202
2,557,297	6/1951	Lea	354/219 X
2,665,618	1/1954	Heidecke	354/288
3,344,725	10/1967	Finelli	354/288

FOREIGN PATENTS OR APPLICATIONS

838,063	6/1960	United Kingdom



1. A light cone baffle for use in photographic apparatus containing a light-sensitive material, said baffle comprising:

a member defining a light-transmitting window;

a plurality of walls;

means for integrally connecting said member with each of said walls so that said walls are movable between a relaxed position and an operative position;

means positioned on said walls when in said operative position for reflecting non-image forming light passing through said window away from the light-sensitive material; and

means for securing said baffle in place in the photographic apparatus with said walls in said operative position.

B 568,226

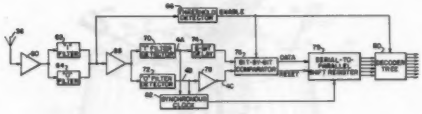
FAIL-SAFE SPEED COMMAND SIGNAL DECODER

Arun P. Sahasrabudhe, Monroeville, Pa., and Michael V. McGinty, Alameda, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 15, 1975, Ser. No. 568,226
Int. Cl.² H04Q 9/00; G08C 25/00
U.S. Cl. 340—167 B **3 Claims**

References Cited
UNITED STATES PATENTS

3,354,433	11/1967	Minc	340/167 B
3,577,187	4/1971	Benson	340/163
3,588,825	6/1971	Shook	340/163
3,624,603	11/1971	Delcomyn	340/146.1 BA
3,703,706	11/1972	Ogura et al.	340/146.1 BA
3,737,577	6/1973	Birkin	178/23 A
3,742,481	6/1973	Nickerson	340/164 R
3,790,821	2/1974	Adamson	340/365 E



1. In a transportation vehicle control system having a vehicle receiver for decoding a vehicle command signal having complementary message signals which carry coded information, the apparatus comprising:

means for isolating signals which are substantially equal to said message signals of said vehicle command signal;

means for amplifying said message signals;

first and second means for detecting first and second messages from said first and second message signals respectively;

means for delaying said first detected message;

means for storing, in a fail-safe manner, said delayed message when it is substantially equal to said second detected message; and

means for decoding said stored message.

B 571,219

START-STOP TRANSISTOR COLPITTS OSCILLATOR CIRCUIT

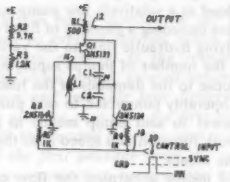
John H. Harshbarger, Xenia, Ohio, assignor to Visual Information Institute, Inc., Xenia, Ohio

Filed Apr. 24, 1975, Ser. No. 571,219
Int. Cl.² H03B 5/12
U.S. Cl. 331—117 R **5 Claims**

References Cited
UNITED STATES PATENTS

2,905,907	9/1959	Sanders	331/173
3,229,227	1/1966	Popodi	331/117 R

1. A start-stop transister colpitts oscillator circuit comprising a tank circuit in the form of an inductor and a pair of serially connected capacitors in parallel with the inductor, one end of said tank circuit forming a first control point and the junction between said capacitors forming a second control point, a first voltage terminal connected to the other end of the tank circuit, a second voltage terminal, a transistor having collector, emitter, and base terminals and having the collector-emitter path connected between said second voltage terminal and said one end of the tank circuit, a source of biasing voltage connected to the base terminal of said transistor and biasing the transistor to conduction, a feedback connection from the juncture of said capacitors to the emitter terminal of



said transistor, first and second switch means each having conductive and nonconductive conditions and connected between said one voltage terminal and said first and second control points respectively, and means for changing both of said switch means between conductive and nonconductive conditions in unison.

REISSUES

FEBRUARY 24, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

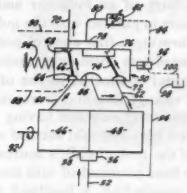
Re. 28,717
NOISE REDUCTION APPARATUS AND METHOD

Fred T. Smith, Newark, Ohio, assignor to Sargent Industries, Inc., Los Angeles, Calif.

Original No. 3,822,551, dated July 9, 1974, Ser. No. 401,222, Sept. 27, 1973. Division of Ser. No. 274,798, July 24, 1972, abandoned. Application for reissue Dec. 9, 1974, Ser. No. 530,693

Int. Cl.² F16H *39/48*

U.S. Cl. 60—428 **8 Claims**



1. A noise reduction apparatus for operating a variable volume and variable pressure auxiliary load, said apparatus comprising:

pump means having a capacity which is sufficiently large to supply said load at a relatively low pump speed;

said pump means including a plurality of fixed displacement pumps supplying hydraulic fluid to the variable load;

means to vary the number of pumps supplying fluid to the load in response to the demands of the load;

engine means operably connected to said pump means for supplying power to said pump means in performing a secondary work function at a speed near the idling speed of said engine means;

throttle control means governing the flow of fuel to the engine means to maintain its horsepower output at a level sufficient to operate the pump means while maintaining the speed of said engine means at a speed near its idling speed; and

means to maintain the flow rate from the pump means at a sufficiently low level to not exceed the capacity of the pump means or the auxiliary load when the engine speed is increased to a predetermined level in excess of its idling speed;

whereby the engine means operates in the low noise level region of speeds near its idling speed or less when supplying power for the pump means in operating the variable volume and variable pressure load, and the pump means and auxiliary load are protected from use in excess of their capacity when the engine means is operating at increased speeds.

Re. 28,718
TEXTILE MATERIAL AND MANUFACTURE

Engelbert Ehrlich, Floha, Saxonia, and Martin Schonfuss, Hohenstein-Ernstthal, both of Germany, assignors to VEB Nahwirkmaschinenbau Malimo Karl-Marx-Stadt, Karl-Marx-Stadt, Germany

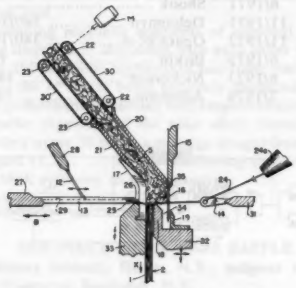
Original No. 3,611,754, dated Oct. 12, 1971, Ser. No. 829,363, June 2, 1969. Application for reissue Mar. 5, 1973, Ser. No. 337,780

Int. Cl.² D04B *23/10*

U.S. Cl. 66—192 **3 Claims**

1. A textile material comprising a base, said base including a plurality of loose fibers, a warp knitted yarn system constituted of parallel rows of interlocking loops piercing said base and forming stitches on the opposite side thereof to secure said yarn system on said base, and a plurality of discrete fiber loops intermediate said base and said yarn system, each of said fiber loops being formed of at least one of said loose fibers and having ends which are located within the base and a closed loop portion closely underlying and following the configuration of a respective loop of the warp knitted yarn system, each of the fiber loops thereby being paired with a respective loop of the warp knitted yarn system, each of the pairs of loops passing through a next adjacent one of the pair of loops in the same row.

2. A method of producing a textile material on a warp knitting machine comprising feeding a relatively voluminous web of loose fibers in a relatively uncompressed condition into the operating range of the reciprocating needles of the warp



knitting machine, advancing the knitting needles into and through said web for perforation of the web and for positioning of the hooks at the far side of the web, inserting warp yarns into the hooks of said knitting needles at the far side of the web, retracting said knitting needles into the web thereby to insert loose fibers into the hooks of the knitting needles, closing said hooks of said needles after said insertion of loose fibers but prior to withdrawal of the needles from said mass, forming the inserted warp yarns together with the inserted fibers into warp knit stitches on the near side of the web, and immediately proximate the operating range of the needles on the far side of the needles in the direction of travel of the web compressing the web into a cross section in the direction of reciprocation of the needles pronouncedly smaller than the cross section of the web in said direction as it is fed to the operating zone.

Re. 28,719
METHOD OF MAKING FLAT STEEL FILES

John G. Cutton, Youngstown, Ohio, assignor to United States Steel Corporation, Pittsburgh, Pa.

Original No. 3,820,372, dated June 28, 1974, Ser. No. 211,091, Dec. 22, 1971. Application for reissue Mar. 5, 1975, Ser. No. 555,485

Int. Cl.² B21B *3/02*

U.S. Cl. 72—203 **5 Claims**

1. A method of making high-carbon steel flat bar stock, the steps comprising:

a. hot rolling a high-carbon steel slab at a temperature within the range 1,600° to 2,2000°F on a strip mill to form a strip having a thickness as desired for the final bar stock,

b. coiling said strip at a temperature above 1,000°F,

c. annealing said coiled strip in a reducing atmosphere at a temperature above the A_1 critical temperature for at least 2 hours to austenitize the steel microstructure,

d. maintaining the reducing annealing atmosphere at a dewpoint of less than +15°F at least at temperatures above about 1,100°F,

e. furnace cooling the annealed coiled strip at a rate of about 20° to 40°F per hour to a temperature of about 1,250°F while maintaining the reducing atmosphere at a dewpoint of less than +15°F to form spheroidized carbide precipitates, and then furnace cooling the coiled strip to a temperature below about 400°F while maintaining the reducing atmosphere to avoid surface oxidation, and

f. uncoiling [and slitting] the strip [into bars of the desired width] *and cutting bars of the desired size therefrom.*

Re. 28,720

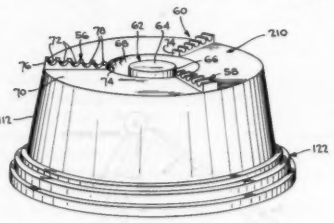
FOOD PLATE SERVICE COVER

Mirko S. Sedlak, 1991 Delowe Drive, SW., Atlanta, Ga. 30311

Original No. 3,815,736, dated June 11, 1974, Ser. No. 207,398, Dec. 13, 1971. Continuation-in-part of Ser. No. 103,992, Jan. 5, 1971, abandoned. Application for reissue Oct. 21, 1974, Ser. No. 516,177

Int. Cl.² A47G *19/02, 23/04*

U.S. Cl. 206—501 **9 Claims**



7. A food plate service cover comprising a round top portion having a peripheral rim, and a side wall depending from said peripheral rim having a bottom peripheral lip adapted to engage a food plate, said top portion having stabilizing means disposed thereon and having an upper surface extending inwardly from said peripheral rim toward the center of said top portion whereby sliding of a food plate stacked on said food plate service cover is reduced, said stabilizing means including three circumferentially spaced radially extending means, each defining a plurality of radially spaced recesses therein to receive a portion of the stacked food plate.

Re. 28,721

TIME SAVER PLASTIC DRAW-BACK VALVE ASSEMBLY

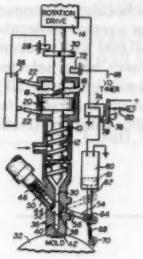
John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Green Brook, N.J.

Original No. 3,709,644, dated Jan. 9, 1973, Ser. No. 92,816, Nov. 25, 1970. Application for reissue Nov. 14, 1973, Ser. No. 415,639

Int. Cl.² B29F *1/04*

U.S. Cl. 425—159 **16 Claims**

10. *An injection molding apparatus including a barrel for holding molten plastic material, a first passage connected at one end with the barrel for receiving hot plastic material from the barrel, a runner that supplies molten material to a mold cavity, a second passage connected with the other end of the first passage for receiving molten material from the first passage for supplying the material to the mold runner, a plasticizer including a helically threaded screw in the barrel, with a front end of the screw facing the first passage, pressure means for advancing the screw longitudinally toward the first passage to discharge material from the barrel on an injection stroke, a motor for rotating the screw in a direction to urge material in the barrel toward the first end of the screw during rotation of the screw as it backs away from said first passage, during its recovery stroke, automatic means for stopping further rotation of the screw after it has backed away far enough to accumulate, between the screw and the first passage, enough material for the next mold charging operation, means for regulating the plasticizer cycle to be less than that absent such means including a cylinder for communication at one end with the mold runner, a piston in the cylinder, movable in one direction providing means to maintain pressure on any molten material in the cylinder and in the mold runner during shrinkage of the molten*



material, the piston being movable in the other direction providing means to exert a suction action in the cylinder for drawing molten material in the runner back toward the cylinder, and valve means, located between the first and second passages and movable into different positions including a first position that puts the first passage in communication with the second passage, and a second position that shuts off the first passage from the second passage and provides communication between the cylinder and the second passage, said valve preventing communication between said cylinder and said first passage so that recovery of the plasticizer can begin before shrinkage of the plastic in the mold and before drawback of plastic from the runner.

Re. 28,722

BUTADIENE-STYRENE COPOLYMER-CEMENT COMPOSITION AND METHOD OF PREPARATION

Phillip F. Sanders, Glen Mills, Pa., assignor to The Dow Chemical Company, Midland, Mich.

Original No. 3,043,790, dated July 10, 1962, Ser. No. 685,078, Sept. 20, 1957. Application for reissue Jan. 11, 1974, Ser. No. 432,701

Int. Cl.² C04B *7/35;* **C08K** *5/54;* **C08L** *9/08*

U.S. Cl. 260—29.7 S **5 Claims**

1. A cement *mortar* composition comprising a mixture of Portland cement, mineral aggregate, about 5%–25% based on the weight of said Portland cement of styrene-butadiene-1,3 copolymer having a styrene to butadiene weight ratio of about 30:70 to 70:30, water in amount not in excess of about 40% based on the weight of said Portland cement, and, based on the weight of said copolymer, (a) 2–10% of non-ionic surfactant, (b) 1–7.5% of anionic surfactant, at least 15% of which is a sodium alkyl sulfate in which the alkyl group contains 9–17 carbon atoms, and (c) [1–5% of] polyorganosiloxane fluid surfactant, *in an amount equal to about 2.5% of a polyorganosiloxane emulsion containing 29% of the polyorganosiloxane* the sum of (a) and (b) not exceeding about 11% by weight of said copolymer and the weight ratio of (a) to (b) being within the range of about 0.7:1 to 10:1.

Re. 28,723

POLYCARBONATE RESINS BLENDED WITH ACRYLATE ELASTOMERS FOR IMPROVED IMPACT STRENGTH

Charles B. Holder; Isaac D. Rubin, both of Wappingers Falls; and Carmen M. Cusano, Poughkeepsie, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Original No. 3,742,088, dated June 26, 1973, Ser. No. 104,789, Jan. 7, 1971. Application for reissue April 10, 1974, Ser. No. 459,744

Int. Cl.[2] C08L *67/06*

U.S. Cl. 260—873 5 Claims

1. A polycarbonate resin composition characterized by increased impact strength and comprising a blend of polycarbonate resin having an average molecular weight of at least 8000 and from about 3 to 35 percent by weight based on the weight of polycarbonate—elastomer blend of at least one elastomer having an average molecular weight between about 100,000 and 2,000,000 with a second order transition below 0°C., said elastomer being selected from the group consisting of *a copolymer of* lower alkyl acrylates with stearyl acrylates, *lower alkyl acrylate homopolymers* and lauryl methacrylate rubber [and poly(methyl methacrylate].

Re. 28,724

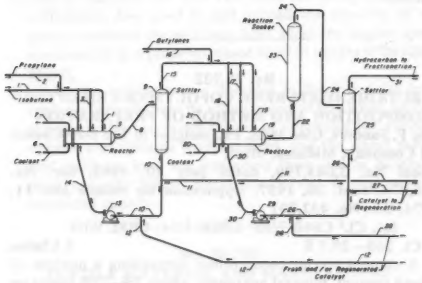
ISOPARAFFIN ALKYLATION WITH A LIGHTER OLEFIN AND SUBSEQUENTLY WITH A HEAVIER OLEFIN

Jay E. Sobel, Highland Park, Ill., assignor to Universal Oil Products Co., Des Plaines, Ill.

Original No. 3,780,131, dated Dec. 18, 1973, Ser. No. 269,907, July 7, 1972. Application for reissue Apr. 28, 1975, Ser. No. 572,600

Int. Cl.[2] C07C *3/54*

U.S. Cl. 260—683.45 9 Claims



1. A process for producing an alkylation reaction product from an isoparaffin reactant, a lighter olefinic reactant and a heavier olefinic reactant which comprises the steps of:

(a) contacting said isoparaffinic reactant and said lighter olefinic reactant with a first *hydrogen fluoride* alkylation catalyst in a first alkylation zone at first alkylation conditions;

(b) settling from said first alkylation zone a first hydrocarbon phase which comprises a portion of said isoparaffinic reactant and a portion of said alkylation reaction product;

(c) contacting said heavier olefinic reactant and at least a portion of said first hydrocarbon phase with a second *hydrogen fluoride* alkylation catalyst in a second alkylation zone at second alkylation conditions;

(d) settling from said second alkylation zone a second hydrocarbon phase which comprises at least a portion of said alkylation reaction product; and,

(e) recovering said alkylation reaction product from said second hydrocarbon phase.

Re. 28,725

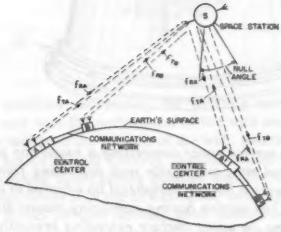
SATELLITE AND SPACE COMMUNICATIONS SYSTEMS

Henry P. Hutchinson, Ridgewood, and Paul R. Arendt, Eatontown, both of N.J., assignors to Satellite and Space Communications Systems, Inc., Summit, N.J.

Original No. 3,262,116, dated July 19, 1966, Ser. No. 338,179, Jan. 16, 1964. Continuation-in-part of Ser. No. 29,111, May 13, 1960, abandoned. Application for reissue July 31, 1970, Ser. No. 60,779

Int. Cl. H04b *7/20*; B64g *3/00*

U.S. Cl. 343—100 ST 31 Claims



1. The method of communicating intelligence by radio waves between at least two bodies in space in motion with respect to each other where a first of said bodies includes an antenna having at least one null orientation with respect to radio waves received from a predetermined direction, said method comprising the steps of:

(a) transmitting the intelligence simultaneously via at least two separate radio waves from at least two geographically widely separated transmitting stations on said second body respectively and with said stations having sufficient separation that the two lines of sight from the location of said antenna on said first body to each of said separated transmitting stations on said second body form a finite angle therebetween which exceeds the angular cross section of the antenna null;

(b) and responding at said first body in space only to strongest of the several signals received from said transmitting stations on said second body;

whereby said antenna on said first body can have at any time a null orientation with respect to, at most, one of said radio waves and said first body thereby continually receives said intelligence from said second body.

PATENTS

GRANTED FEBRUARY 24, 1976

ERRATA

For CLASS	See PATENT NO.
032-014 B	3,939,598
032-059	3,939,599
269-002	3,939,915
197-187	3,939,963
269-023	3,940,122
208-137	3,940,190
254-002 R	3,940,338

PATENTS

GRANTED FEBRUARY 24, 1976

NOTE – A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

GENERAL AND MECHANICAL

3,939,496
ENDOPROSTHETIC BONE JOINT

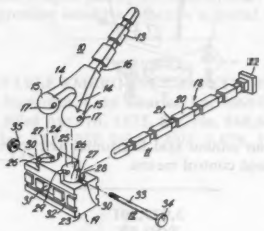
Robin Sydney Mackwood Ling, Teignmouth, and Alan John Clive Lee, Exeter, both of England, assignors to National Research Development Corporation, London, England

Filed Oct. 2, 1974, Ser. No. 511,264

Claims priority, application United Kingdom, Oct. 15, 1973, 47961/73

Int. Cl.² A61F *1/24*

U.S. Cl. 3—1.91 **4 Claims**



1. An endoprosthetic bone joint device comprising:

a first hinge component of forked form with two form arms similarly defining at their free end portions respective spherically-shaped ball bearing surfaces, and said arms being diametrally bored relative to said ball surfaces to define respective, coaxially aligned, concave, circular cylindrical bearing surfaces therethrough;

a second hinge component including a bearing part of generally T-shape with a cross-bar and stem, said cross-bar similarly defining at its free end portions respective spherically-shaped socket bearing surfaces in articulatory engagement with said ball surfaces, and said stem being bored to define a further concave circular cylindrical surface coaxially aligned with, and disposed between, the first-mentioned concave surfaces; and

a hinge-coupling component defining a convex circular cylindrical surface located in articulatory engagement with said concave surfaces, said hinge-coupling component being releasably connected with said hinge components.

3,939,497
FASTENING MEANS FOR HIP JOINT PROSTHESIS SOCKETS

Günther Heimke, Mannheim; Peter Griss, Plankstadt; Hanns Von Andrian-Werburg, Ilvesheim; Herbert Heil, Edingen, and Paul Wachter, Mannheim, all of Germany, assignors to Friedrichsfeld GmbH. Steinzeug-und Kunstoffwerke, Mannheim, Germany

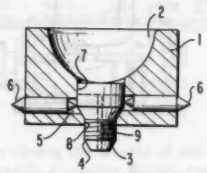
Filed Dec. 9, 1974, Ser. No. 530,553

Claims priority, application Germany, Dec. 28, 1973, 2365022

Int. Cl.² A61F *1/24*

U.S. Cl. 3—1.912 **5 Claims**

1. A socket for hip joint prosthesis for cement free implantation comprising a body of biologically inert material provided with a semi-spherical concentric bearing cavity, a series of pegs longitudinally slidably mounted in said body in space relation to each other, a threaded screw mounted for axial movement in a concentric bore provided in said body for operative engagement with one end of each of said pegs, the threads being disposed on one end of the screw for self-tapping engagement with the tissue of the bone, a portion of the screw remote from said one end being of larger diameter than the threaded portion to define an annular shoulder, said bore



having a portion of reduced diameter defining an annular shoulder for engagement with the first mentioned shoulder for assisting in holding the body in place.

3,939,498
ENDOPROSTHETIC FEMORAL HEAD

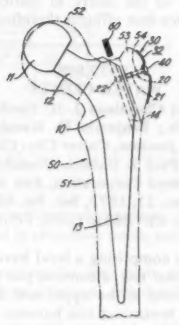
Alan John Clive Lee, and Robin Sydney Mackwood Ling, both of Devon, England, assignors to National Research Development Corporation, London, England

Filed May 28, 1975, Ser. No. 581,475

Claims priority, application United Kingdom, May 29, 1974, 23794/74

Int. Cl.² A61F *1/24*

U.S. Cl. 3—1.913 **5 Claims**



1. An endoprosthetic femoral head device comprising:

a component including a ball-shaped head connected, by way of a necked portion, to the wider end of a tapered intramedullary stem, said wider end having a slot formed longitudinally therein, which slot is open at one end and has an interior width greater than that at its longitudinal mouth;

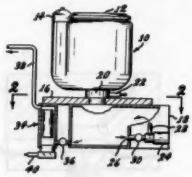
an elongate member enlarged at one end, said one end being engaged in said slot at said open end thereof and captively movable therealong with the remainder of such member projecting transversely from said slot;

and a fastener connected around the other end of said member.

3,939,499
RECIRCULATING ELECTROLYTIC TOILET

George C. Roberts, Venice, Calif., assignor to Monogram Industries, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 286,593, Sept. 5, 1972, abandoned. This application July 22, 1974, Ser. No. 490,347
Int. Cl.² E03D 5/00; A61L 11/00
U.S. Cl. 4—10 16 Claims



1. A self-contained toilet system comprising:

a holding tank in fluid flow communication with a toilet bowl for accepting a mixture of a salt-containing fluid, and solid and liquid waste matter deposited in said bowl;

an electrolytic decomposition unit spaced from and separate from said holding tank and in fluid flow communication therewith, said unit having a pair of spaced electrodes disposed therein, and voltage means operatively connected to each of said electrodes; and

macerating and communiting pump means separate from said tank and in fluid communication with both said unit and said holding tank for pumping the mixture of salt-containing fluid and solid and liquid waste matter from said holding tank, macerating and communiting said pumped matter into a fine slurry in colloidal solution and circulating said fine slurry back into said holding tank, then from said holding tank into the interior of said unit in an agitated state and into contact with said electrodes therein until liberated chlorine and oxygen produced by the contact of said slurry with said electrodes react with the remainder of the slurry to clarify said slurry and generate an odor-free effluent therefrom.

3,939,500
WATER CLOSET

Marshall W. Miller; Christiaan J. H. Vanden Broek, both of Ann Arbor, Mich.; Benjamin H. Stansbury, Jr., Beverly Hills; Thomas H. Jamison, Culver City; Charles W. McHose, Hawthorne, and Paul T. Dubson, Westchester, all of Calif., assignors to Thetford Corporation, Ann Arbor, Mich.

Filed Dec. 21, 1973, Ser. No. 427,338
Int. Cl.² E03D 11/00, 11/10
U.S. Cl. 4—10 17 Claims

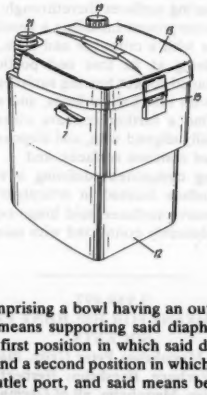
1. A water closet comprising a bowl having an open upper end and an open lower end, a concave pan beneath said bowl and supported thereon at the upper end thereof for pivotal movement about a horizontal axis between a first position in which said pan encloses said open lower end and a second position in which said pan is tilted in an elevated position at one side of said bowl, said pan being in spaced relation to said bowl and having a depth so that when in its first position its peripheral lip is at a higher elevation than the open lower end of said bowl, water flushing means actuable for discharging flush water to the interior of said bowl, and an actuator mechanism connected to said pan and to said water flushing means for moving said pan to its second position and for simultaneously actuating said flushing means to deliver flush water to the bowl while the pan is tilted and for returning the pan to its first position and for rendering said flushing means inactive, said actuator mechanism including a control means, a crank having at one end a crank axis coincident with said horizontal axis, said crank being operably connected at said one end to said pan for pivotal movement with said pan around said horizontal axis, and a link connected to the other end of said crank and to said control means for pivoting said crank and

thereby said pan around said horizontal axis in response to movement of said control means.

3,939,501
TOILET

Frank T. Sargent, Jacksonville, Fla., assignor to Thetford Corporation, Ann Arbor, Mich.

Filed Nov. 1, 1974, Ser. No. 519,804
Claims priority, application United Kingdom, Nov. 22, 1973, 54343/73
Int. Cl.² E03D 11/10
U.S. Cl. 4—78 18 Claims



1. A toilet comprising a bowl having an outlet port, a flexible diaphragm, means supporting said diaphragm for movement between a first position in which said diaphragm closes said outlet port and a second position in which said diaphragm uncovers said outlet port, and said means being operable to tension said diaphragm into contact with said outlet port when said diaphragm is in said first position.

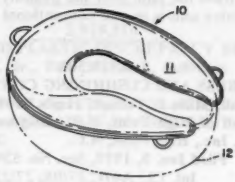
3,939,502
DISPOSABLE PAD

Marjorie A. Miller, Rte. 2 Box 414A, Sleepy Hollow Road, Dundee, Ill. 60118

Filed Aug. 5, 1974, Ser. No. 494,458
Int. Cl.² A61G 9/00
U.S. Cl. 4—113 6 Claims

1. A disposable bedpan pad comprising a pad member having generally the shape and size of the flesh-engaging seat portion of a bedpan, and shielded pressure sensitive retention means on the underside of said pad member for releasably anchoring said pad member in place on said seat portion, said

retention means being located at least at the distal portions and at the bight portion of said pad and being shielded prior



to use of said bedpan pad by removable sheet material so as to expose pressure sensitive adhesive material.

3,939,503

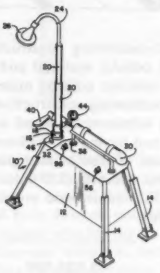
PORTABLE EMERGENCY SAFETY SHOWER

Harold W. Nazworth, Lake Charles, La. 70601

Filed Apr. 16, 1975, Ser. No. 568,690

Int. Cl.² B05B *9/04, 13/02;* **A47K** *3/22*

U.S. Cl. 4—145 **4 Claims**



1. A portable emergency safety shower comprising a large capacity water supply tank having water-resistant, corrosion-proof, inner and outer surfaces thereof, leg elements extending from the supply tank for supporting said tank, a telescoping series of pipe elements having its large diameter terminal securely connected to an outlet in the upper surface of said tank and having elements of the telescoping series when in the collapsed form positioned within the tank and when in the extended arrangement positioned upwardly from the tank in a generally vertical alignment so that its small diameter terminal is above the tank, a curved pipe connection extending from the small diameter terminal to a shower head element, a pressurized cylinder for storage of air or nitrogen under high pressures therein and being mounted upon a portion of the water supply tank, and a valved conduit connecting said pressurized cylinder to the water supply tank including a manual valve to selectively release and shut off the passage of high pressure gas such as air or nitrogen from the pressurized cylinder to the water supply tank for in turn driving water into the water supply tank through the telescoping series of pipe elements and the shower head element.

3,939,504

SWIMMING-POOL STRUCTURE

Josef Linecker, Rosengasse 5, 5230 Mattighofen, Austria

Filed June 20, 1974, Ser. No. 481,480

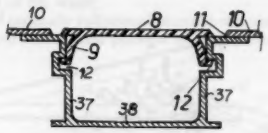
Claims priority, application Austria, June 22, 1973, 5524/73

Int. Cl.² E04H *3/18*

U.S. Cl. 4—172.17 **6 Claims**

1. In a swimming pool the improvement which comprises:

a plurality of plates secured in substantially contiguous relationship and defining the bottom of the swimming pool, channels lying below the bottom surfaces of the plates bridging the adjacent side edges of said plates and upwardly open at the bottom of said swimming pool, said channels having outwardly extending portions at the upper end thereof for attaching adjacent sides of the bottom surfaces of said plates to said channels said channels further having flanks provided with inwardly open grooves;



respective covers closing the mouths of said channels and having downwardly extending flanges received in said grooves, said covers having planar portions substantially flush with said plates along said bottom of said pool, said covers being formed at spaced locations with orifices communicating between the interiors of said channels and sair pool; transverse duct means interconnecting said channels; and

recirculation means connected to said duct means for forcing water through said channels to distribute water into said pool through said orifices.

3,939,505

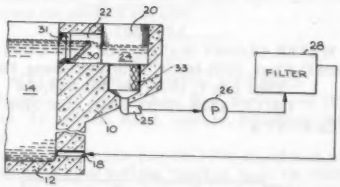
SELF-HINGED, BUOYANT WEIR PLATE FOR SKIMMERS

Richard S. Gross, 1618 Calle De Oro, Thousand Oaks, Calif. 91360

Filed Jan. 6, 1975, Ser. No. 538,739

Int. Cl.² E04H *3/16, 3/18;* **F16L** *2/02*

U.S. Cl. 4—172.17 **11 Claims**



1. A one piece self-hinging, buoyant, skimmer weir for skimmers employed in swimming pools, and the like, comprising:

a substantially rectangular weir plate constructed from a substantially homogeneous, low-density, cellular material; and

means for retaining said weir plate along a seam on the upper surface thereof, said seam being a groove disposed transverse to the direction of liquid flow in said skimmer proximate to the base of said weir plate and said retaining means being cooperatively disposed in said groove.

3,939,506

ODOR CONTROL VENTILATOR

Raymond H. Pearson, 627 Sherwood Drive, Richardson, Tex. 75080

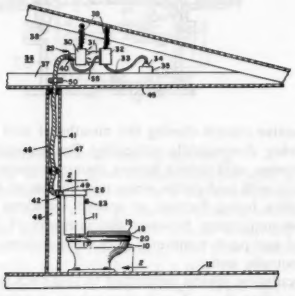
Continuation-in-part of Ser. No. 434,519, Jan. 18, 1974. This application Aug. 13, 1974, Ser. No. 496,954

Int. Cl.³ E03D *9/04;* **A47K** *13/00*

U.S. Cl. 4—213 **12 Claims**

1. A toilet deodorizing accessary for use in combination with a conventional water tank and toilet bowl, the water tank

having a water discharge conduit through the bottom of the tank, a flush valve controlling the flow of water from the tank into said conduit, and an overflow pipe connected into said discharge conduit below the valve, said toilet bowl having a water distribution channel in communication with said discharge conduit for distributing water from said tank into said bowl when said flush valve is operated to flush said bowl, said accessary comprising a cover for said tank having a top wall and spaced inner and outer side walls depending from said top and integrally connected by a narrow bottom wall to form a



continuous hollow passage extending peripherially beneath said top wall, a hole through said outer wall, and at least one hole through said inner wall, an electrically driven air blower, having a suction side and a discharge side, an air duct connected between said suction side and the hole in the outer side wall of said cover whereby odor laden air may be drawn by said blower in seriatim from said toilet bowl through said water distribution channel, said water discharge conduit, said overflow pipe, the hole in said inner side wall of the cover, the continuous hollow passage in said cover, the hole in said outer wall into said air duct and discharged through said blower.

3,939,507

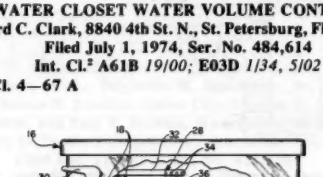
WATER CLOSET WATER VOLUME CONTROL

Edward C. Clark, 8840 4th St. N., St. Petersburg, Fla. 33702

Filed July 1, 1974, Ser. No. 484,614

Int. Cl.[2] A61B *19/00;* **E03D** *1/34, 5/02*

U.S. Cl. 4—67 A **27 Claims**



1. A water closet comprising, a flushing water tank including an outlet valve unit having an outlet passage with a valve seat, said unit further having a valve member operatively associated with said valve seat in conventional assembly of the outlet valve unit for controlling the flow of flushing water from the tank through the outlet passage, and a device including a conduit operatively fixed to a fixed portion of said outlet valve unit and having one end portion in substantially fixed sealed telescoped engagement with said outlet passage, and an opposite end portion having a valve seat spaced upwardly from the first said valve seat, and said valve member being operatively associated with the conduit valve seat for controlling the flow of flushing water from the tank through the conduit and the outlet passage, thereby reducing the quantity of flushing water discharged from the tank over the quantity discharged when the outlet valve unit is in said conventional assembly.

3,939,508

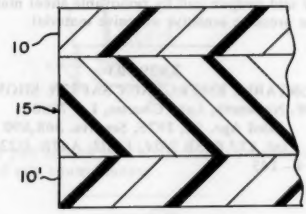
MATTRESS AND CUSHIONING CONSTRUCTION

Ervin T. Hall; Miles E. Talbert; James R. Walsh, and Max E. Hinkle, all of High Point, N.C., assignors to Thomasville Products, Inc., High Point, N.C.

Filed Jan. 8, 1975, Ser. No. 539,524

Int. Cl.[2] A47C *27/08, 27/22*

U.S. Cl. 5—345 R **3 Claims**



1. A laminated cushioning construction comprising outer layers of resilient cellular material and an inner layer of reground, bonded, resilient cellular material, the compression modulus of said cushioning construction being at least 3, said inner layer being substantially equal in length and width to said outer layers and having an thickness in the range of 1–5 times the thickness of one of said outer layers, said outer layers having a first firmness ILD value and said inner layers having a second ILD value, said second value being greater than said first value.

3,939,509

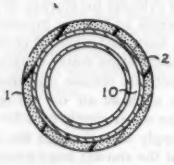
LIGHT-WEIGHT BUOY

Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss. 39576

Continuation of Ser. No. 414,441, Nov. 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 225,386, Feb. 11, 1972, Pat. No. 3,803,651, which is a continuation-in-part of Ser. No. 23,789, March 30, 1970, Pat. No. 3,670,349, said Ser. No. 23,789, is a continuation-in-part of Ser. No. 531,564, March 3, 1966, Pat. No. 3,503,825. This application Feb. 24, 1975, Ser. No. 552,621

Int. Cl.[2] B63B *21/52*

U.S. Cl. 9—8 R **12 Claims**



1. A hollow article of manufacture, including:

a unitary, toroidal, blown tube of thermoplastic material which is heated and blown into a desired hollow toroidal shape, the said tube having integral, solid walls of strength-providing thickness, capable of substantially resisting its breakage or bending;

the walls being of sufficient thickness and rigidity to allow the tube to independently house and support a gas substantially permanently sealed inside said toroidal tube;

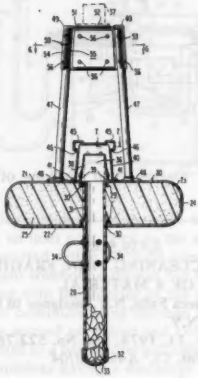
a matrix of porous shape-holding material, encompassing said toroidal tube, extending outward of the tube and protecting it from shock; and

waterproof skin means, sheathing the said porous material.

3,939,510
LIGHTED PLASTIC DISCREPANCY BUOY

Robert F. Curd, Jr., Fort Marshall, Sullivans Island, S.C. 29482

Filed Nov. 7, 1974, Ser. No. 521,779
Int. Cl.² B63B *21/52*; B63C *9/21*
U.S. Cl. 9—8.3 E **4 Claims**



1. A buoy comprising a substantially flat disc-like flotation body portion which is relatively thin axially and wide laterally and symmetrical about a central axis, said flotation body having a central axial bore formed entirely therethrough, a depending elongated ballast tube having an upper end portion fixedly anchored within said bore and terminating substantially at the top surface of said flotation body portion and extending for a substantial distance below said body portion to stabilize the buoy in a normal upright position, a battery housing centrally disposed on the top face of said flotation body portion immediately above and covering the top of said ballast tube, and a centrally disposed elevated light support for the buoy mounted on and extending substantially above the flotation body portion, said light support comprising paired generally vertical legs rising from said flotation body portion and having lower ends anchored to the top of said body portion, said legs symmetrically arranged about the central axis of the buoy, and a box-like reinforcing and interconnecting cap for the tops of said legs including corner substantially tubular sockets receiving upper end portions of the legs and secured thereto, whereby said cap rigidly braces all of the legs, said cap having a top wall forming a mounting seat for a light means.

3,939,511
LIFE-SAVING DEVICE

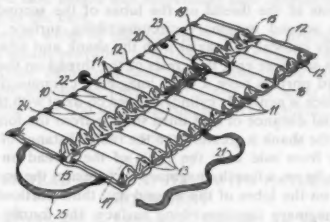
Ove Hviding Buttenschon, Vestervangen 23, DK-4550 Asnaes, Denmark

Filed Jan. 16, 1974, Ser. No. 433,785
Claims priority, application Denmark, Jan. 17, 1973, 271/73
Int. Cl.² B63C *9/08*
U.S. Cl. 9—342 **3 Claims**

1. A life preserver comprising:

a flexible apron-like portion, a substantially shorter flexible head-supporting portion, and a flexible intermediate region intermediate said portions, said portions having two rows of transversely extending elongated narrow longitudinally spaced pockets along the entire length thereof, said pockets in said two rows being laterally disposed and laterally spaced in end-to-end relationship and being axially spaced from each other sufficiently to define therebetween a flexible central region of each of said portions, said flexible intermediate region having a head receiving opening for receiving the head of a user therein, said head-supporting portion overlying the shoulders of said user when in use out of the water and said apron-like portion overlying the chest of the user when in use and extending below the waist of said user down to his thighs out of the water;

a plurality of generally cylindrical buoyant members each in a respective one of said pockets to impart buoyancy to



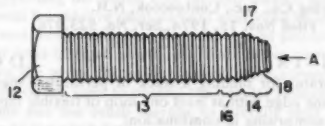
said portions, said apron-like portion being flexible for flexing at intervals between said pockets containing said buoyant members for conforming in shape to the body of said user when said user changes position or posture out of the water and for being reversibly foldable at about the waist of said user to allow the reversely folded part to be selectively positioned overlying that part of said apron-like portion overlying the chest of the user, said head-supporting portion being flexible for freely floating away from said user's shoulders in the water and for underlying and supporting said user's head above the water; and

means for holding the reversely folded part in a folded condition overlying that part of said apron-like portion overlying the chest of the user.

3,939,512
MALE SCREW-FORMING MEMBERS

Walter Thurston, 28 Atwood Ave., Kew, Surrey, and William Kerrigan, 22 Feltham Road, Ashford, Middlesex, both of England

Division of Ser. No. 59,333, July 29, 1970, abandoned, which is a continuation of Ser. No. 760,924, Sept. 19, 1968, abandoned. This application Nov. 21, 1974, Ser. No. 525,874
Int. Cl.² B21H *3/02*; B23G *9/00*; B21K *1/44*
U.S. Cl. 10—10 R **1 Claim**



1. A method of making a male, screw-forming member comprising; forming a blank with a shank having first and third portions of substantially constant circular cross-section and a second portion at the free end of the shank and which tapers towards said end and has a generally conical surface, the third portion being interposed between the first and second portions; forming an intermediate product by forming a machine-screw thread of constant form on said shank and extending continuously from said free end onto said first portion, there being at least one complete turn of thread on said third portion; the crests of the thread on the first portion lying on a first

imaginary surface which is generally cylindrical and coaxial with the shank; after the completion of the thread formation and as an operative separate therefrom, deforming said second and third portions of the threaded intermediate product by applying a radially inwardly directed force at positions spaced around the circumference of the blank by internally threaded dies, the sole relative movement between the blank and the dies being in a direction radially inwardly of the blank thus to move parts of the second and third portions inwardly relative to said axis to form relief portions with the consequent outflow of metal between such parts to provide a series of lobes each of which extends axially of the shank for the whole of the axial length of the second and third portions, the lobes being spaced circumferentially around the shank in axial alignment by the relief portions and being arranged such that; the crests of the thread on the lobes of the second portion have a second imaginary circumscribing surface which is generally conical, is coaxial with the shank and which tapers towards said free end; the crests of the thread on the lobes of the third portion have a third imaginary circumscribing surface which is generally cylindrical and co-axial with the shank; the radial distance of said third surface from the longitudinal axis of the shank is greater than the radial distance of said first surface from said axis; the roots of the thread on the first portion lie on a fourth imaginary surface and the roots of the thread on the lobes of the second and third portions lie on a fifth imaginary circumscribing surface, the fourth and fifth surfaces being cylindrical and coaxial with the shank; the radial distance of said fifth surface from the longitudinal axis of the shank being greater than the radial distance of said fourth surface from said axis; the crests of the thread on the axial relief portions of said third portion lie on a sixth imaginary inscribed surface, the roots of the thread on the axial relief portions of said second and third portions have a seventh imaginary inscribed surface, the sixth and seventh surfaces being generally cylindrical and coaxial with the shank; the radial distances of said sixth and seventh surfaces being less than the radial distance of the first and fourth surfaces from said axis respectively, and the crests of the thread on the axial portions of the second portion have an eighth imaginary inscribed surface which is generally conical, is coaxial with said shank and tapers to said free end; such that the thread on the lobes forms, in a plain hole of appropriate diameter, a female thread of a greater effective diameter than the effective diameter of the thread on said first portion.

3,939,513

PROCESS AND APPARATUS FOR BINDING

Charles F. H. Crathern, III, Contoocook, and Sherman W. Twitchell, Hopkinton, both of N.H., assignors to Crathern Engineering Co., Inc., Contoocook, N.H.

Filed Nov. 15, 1974, Ser. No. 523,976
Int. Cl. B42c *19/00*
U.S. Cl. 11—1 A **13 Claims**

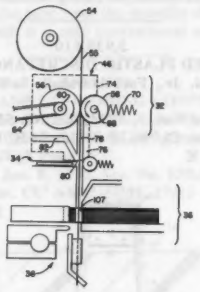
1. Apparatus for binding a stack of perforated sheets together at one edge with at least one loop of flexible tape, said apparatus comprising in combination:

means for supporting said stack of said perforated sheets so that at least one perforation in each sheet is registered with a corresponding perforation in each of the other sheets;

means for pneumatically stringing said tape from a substantially continuous supply thereof through said registered perforations;

cut-off means for severing from said supply a length of tape including the portion thereof strung through said registered perforations;

forming means for flexing said length of tape so that the latter forms a loop extending around an adjacent edge of said stack of sheets and through said registered perforations; and



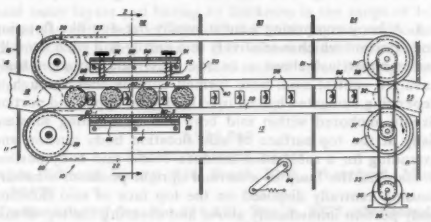
means for sealing together end portions of said looped length of tape.

3,939,514

APPARATUS FOR CLEANING THIN, FRAGILE WAFERS OF A MATERIAL

Richard L. Cook, Seneca Falls, N.Y., assignor to Kayex Corporation, Rochester, N.Y.

Filed Nov. 11, 1974, Ser. No. 522,786
Int. Cl.² A46B *13/04*
U.S. Cl. 15—21 C **19 Claims**



1. Apparatus for simultaneously cleaning the surfaces of a number of thin, disc-like wafers being moved in a linear path comprising, in combination:

at least one pair of endless belts defining the linear path of movement for the wafers, one belt being arranged relative to the other with the facing portions of the belts being spaced apart by at least the diameter of the wafers interposed therebetween so as to frictionally engage the peripheral edges thereof for simultaneously moving and rotating the wafers in one direction along the path;

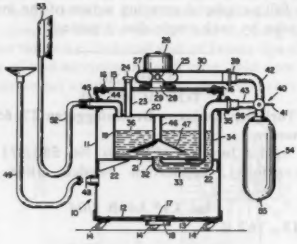
a plurality of abrading members rotatably mounted on each side of the path for engaging and cleaning the respective surfaces of the wafers, the abrading members being arranged in pairs along the path and each pair comprising an abrading member on each respective side of the path; and

drive means operatively coupled to the belts for moving one belt at a faster rate than the other for imparting rotary motion to the wafers in a direction corresponding to that of the faster moving belt and to the abrading members for rotating the same, the abrading members comprising a pair being rotated in opposite directions, the rotary forces applied to surfaces of the wafers by each pair of abrading members being nullified to the extent that rotation of the wafers in the one direction and movement along the path by the belts is not inhibited.

3,939,515
DUAL PURPOSE CLEANING APPARATUS

Stanley F. Platek, 187 Maplewood Ave., Maplewood, N.J. 07040

Continuation-in-part of Ser. No. 444,781, Feb. 22, 1974, abandoned. This application Feb. 10, 1975, Ser. No. 548,405
Int. Cl.² A47L *11/20*
U.S. Cl. 15—321 10 Claims



1. In cleaning apparatus of the type including a main container having an inlet port open to the atmosphere, a second container supported within the main container and adapted to hold a detergent solution, a blower fan having an intake port communicating with the interior of the main container and a discharge port communicating through a first conduit to the interior of the second container and communicating through a second conduit to a bag means for collection contamination, the second container having a discharge conduit leading from the interior thereof and external to the main container, the improvement comprising:

baffle means arranged with the discharge conduit of the second container and including means selectively operator-operated to a first position for permitting air drawn into the main container through the inlet nozzle upon operation of the blower fan to flow through the first conduit to the second container for passage through the detergent solution therein to provide suds for delivery through the discharge conduit;

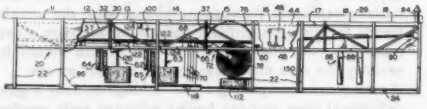
the baffle means selectively operator-operated to a second position for blocking delivery of suds through the discharge conduit of the second container, whereupon the air backs up in the first conduit and flows through the second conduit; and

valve means supported within the collection bag means and closed when the air flows through the first conduit for sealing the bag means, and opened by the air flowing through the second conduit for unsealing the bag means whereupon said bag means receives the air flow.

3,939,516
MODULE CAR WASH

Daniel C. Hanna, 1133 Rivington Drive, Portland, Oreg. 97201

Continuation of Ser. No. 445,214, Feb. 25, 1974, abandoned, which is a continuation of Ser. No. 267,088, June 28, 1972, abandoned. This application Mar. 7, 1975, Ser. No. 556,317
Int. Cl.² B60S *3/06*
U.S. Cl. 15—53 AB 7 Claims



1. In a car wash,

a pathway of a predetermined width along which cars to be washed can be moved,

an attic-like building structure including a framework and sides,

post means at the sides of the pathway supporting the building structure in a position raised completely above the height of a car to be moved along the pathway, the sides being open for sight except for the post means,

a plurality of cleaning mechanisms including an articulated wraparound brush device, a top cleaning device and a window brush device,

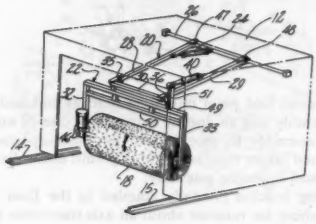
and mounting mechanisms mounting all of said devices and constituting the sole supports for said devices, all of said mounting mechanisms being mounted by said framework above said height and suspending said devices into the path of the cars,

the overall width of the combined building structure and post means providing a narrow building and the building structure being overhead and mounting the mounting means serving to keep them above the spray area to reduce wear and make maintenance convenient.

3,939,517
OVERHEAD BRUSH SYSTEM WITH LATERAL MOVEMENT

David J. Bivens, 205 E. Lawn Ave., Danville, Va. 24541

Filed Nov. 29, 1973, Ser. No. 419,940
Int. Cl.² B60S *3/06*
U.S. Cl. 15—53 A 8 Claims



1. In a car washer assembly: a cylindrical scrubbing brush having a longitudinal axis of symmetry for contacting a vehicle in a wash lane; means for rotating the brush about said axis; support means carrying the brush in a position to contact vehicles in the wash lane with said axis transversely to the lane; and power means operatively connected with said support means for axially reciprocally displacing the brush relative to the wash lane while contacting a vehicle, said support means comprising a first frame suspended over the wash lane and supporting the brush with the axis thereof substantially horizontal for relative displacement over vehicles in the lane; said frame further including first and second pivotal and rigid parallel arms of equal length, the brush being carried by and between the arms, the power means being connected to at least one of the arms to control the angular relation between the arms and the brush thereby to laterally shift the brush relative to the wash lane.

3,939,518
FLOOR TREATMENT MACHINE

Robert P. Whitney, Grand Haven, and Melvin R. Smith, Muskegon, both of Mich., assignors to Clarke-Gravely Corporation, Muskegon, Mich.

Filed Nov. 30, 1973, Ser. No. 420,433
Int. Cl.² A47L *11/30*
U.S. Cl. 15—98 11 Claims

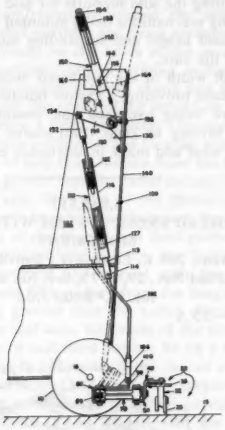
1. In a floor treatment machine including a squeegee for contacting a floor surface to be treated, improved means for

mounting said squeegee such that it tracks the movement of the floor treatment machine comprising:

a squeegee assembly including a squeegee blade for contacting the surface of the floor;

a pivot mounting bracket;

means pivotally coupling said squeegee assembly to said pivot mounting bracket for restricted pivotal motion about the longitudinal axis of motion of the floor treatment machine, said coupling means includes a pin extending between said pivot mounting bracket and said squeegee assembly, said pin spaced from the pivot axis



between said pivot mounting bracket and said squeegee assembly and an aperture formed in one of said bracket or assembly to receive said pin, said aperture dimensioned larger than said pin to permit controlled pivoting of said squeegee assembly;

a lifting bracket pivotally coupled to the floor treatment machine for rotation about an axis transverse to the motion of said machine; and

second means pivotally coupling said lifting bracket and said pivot mounting bracket to permit said squeegee assembly to swing laterally to follow the movement of said floor treatment machine.

3,939,519

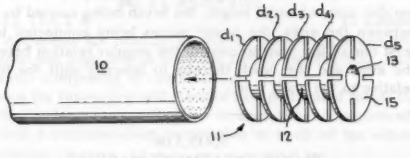
CONDENSER TUBE CLEANING PLUG

Walter B. Muirhead, Rte. 2, Box 155, Jasper, Tenn. 37347

Filed Jan. 16, 1974, Ser. No. 433,875

Int. Cl.² B08B 9/04

U.S. Cl. 15—104.06 R **14 Claims**



1. A cleaning plug for condenser tubes or the like adapted to be propelled through a tube to be cleaned by differential fluid pressure comprising:

an elongated core body for support of a plurality of axially spaced scraper means, said scraper means comprising a plurality of single, separate scraper discs, said scraper discs having slits extending from adjacent said body to the outer periphery to form annular segments,

said slits being open on both sides of said discs, each of said discs being separated from the adjacent disc,

said annular segments being axially flexible so as to readily deflect when said plug is placed in a confining tube to be cleaned,

said discs being sufficiently larger in outside diameter than the inside diameter of said tube to be cleaned and said slits sufficiently narrow to cause the outer tips of said segments to at least touch when said core body is centered in said tube for cleaning action, whereby substantially full peripheral scraping action of the inside wall of said tube by each single disc is gained.

3,939,520

TOOTH BRUSH

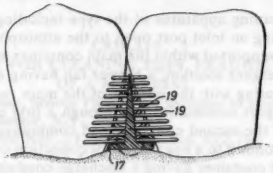
Per Axel Torbjörn Axelsson, Drottninggatan 27, 652 25 Karlstad, Sweden

Filed June 11, 1975, Ser. No. 585,871

Claims priority, application Sweden, June 13, 1974, 7407798

Int. Cl.² A46B 9/04

U.S. Cl. 15—167 R **8 Claims**



1. A tooth brush for cleaning of teeth interspaces, comprising a straight stem of an approximately T-shaped cross-section forming a base plate adapted for insertion into a tooth interspace so as to rest upon and protect the gum, and also forming an attachment plate protruding at right angles to the longitudinal center line of the former, substantially parallel brush bristles extending outwardly therefrom in opposite directions and capable of working simultaneously upon opposed faces of two adjacent teeth, the lengths of the bristles decreasing as the distance from the base plate increases.

3,939,521

BRUSH CONSTRUCTION

Gaylord J. Clark, 4769 Paw Paw Lake Road, Coloma, Mich. 49038

Filed Oct. 15, 1974, Ser. No. 514,827

Int. Cl.² A46B 7/10, 13/04

U.S. Cl. 15—179 **16 Claims**

11. A rotary brush construction, particularly for top washing of vehicles, and adapted for mounting on a rotary shaft, comprising:

a hollow cylindrical perforate core means mounting brush bristles thereon and adapted to loosely receive the shaft therethrough;

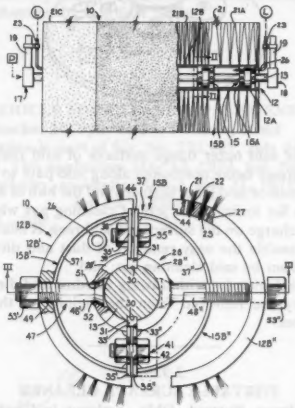
at least a pair of split annular means spaced axially from each other within the core means for securing the core means to the shaft, each said annular means being mounted on the shaft for rotation therewith and having a substantially cylindrical outer surface means spaced radially from the shaft for backing the core, substantially radially extending portions associated with the annular means for circumferentially positioning the core means relative to the annular means, and tension means for pressing the core means against the annular means;

said core means comprising a pair of longitudinally aligned cylindrical core sections having adjacent ends overlapping the outer surface means of one said annular means, so that said outer surface means extends into both said

core sections, said tension means of said one annular means comprising elongate members extending substantially radially from the annular means and into fixed releasable engagement with corresponding ones of said core sections for holding the core section ends against said annular means and for preventing axial separation of said core sections.

15. A rotary top brush construction for washing of vehicles and mountable on a rotary shaft, comprising:

an elongated cylindrical core having outwardly projecting similar length bristles distributed circumferentially and axially over the surface thereof and forming a substantially continuous cylindrical wall of bristle tips circumferentially of and surrounding said core, said core comprising separate but axially adjacent cylindrical core sections,



including an elongate intermediate core section and a pair of shorter flanking end core sections, and means for reducing entanglement of brush bristles with projecting trim items at and adjacent the sides of the vehicle to be washed and comprising an axial distribution density of brush bristles on the end core sections which is substantially less than the axial distribution density of brush bristles on said intermediate core section;

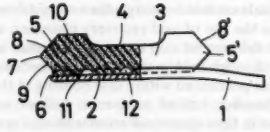
a plurality of collar means spaced axially along and fixed to said shaft for rotation therewith, ones of said collar means being disposed adjacent the outer ends of said end core sections for coaxially supporting same on said shaft for rotation therewith, and others of said collars being axially disposed at the axial interfaces between adjacent core sections for axially joining same together and coaxially fixing same to said shaft for rotation therewith.

3,939,522

TOOTHBRUSH

Hiromichi Shimizu, 26, 4-chome, Kuwazu-cho, Higashisumiyoshi, Osaka, Japan

Filed July 22, 1974, Ser. No. 490,392
Int. Cl.² A61H *13/00*
U.S. Cl. 15—244 R **8 Claims**



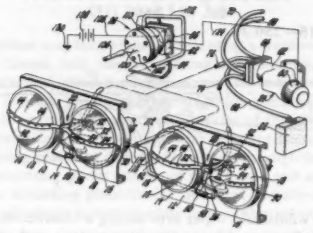
1. A toothbrush having a rigid handle, a head on one end of the handle and a multicellular, resilient, compressible sponge pad fixed on a pad mounting surface of the head, said sponge pad having a configuration of a hexagonal cylinder of which a section perpendicular to the mounting surface of the head is hexagonal elongated along a line parallel to the longitudinal direction of the handle, and upper side-surface parallel to the mounting surface of the hexagonal cylinder, said upper surface having a concavity of relatively large area along the axis of the hexagonal cylinder to form two planar top surfaces on opposite sides of the concavity, the under side-surface of the hexagonal cylinder contacting the pad mounting surface being provided with at least one groove through the pad along the axis of the hexagonal cylinder, and the pad being located on the mounting surface so that one of the longitudinally projecting parts between the top surface and the under side surface of the pad extends beyond the free end of the head.

3,939,523

HEADLAMP WASHER AND WIPER SYSTEM

William H. Kolbe, Birmingham, and Donald C. Unger, Grosse Pointe Park, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1974, Ser. No. 515,184
Int. Cl.² B60S *1/48*
U.S. Cl. 15—250.02 **3 Claims**



1. In a motor vehicle, a headlamp mounted on the vehicle and having a lens, a source of fluid pressure, a reservoir, pump means having inlet means and outlet means, said inlet means fluidly communicating with the reservoir, said pump means operative to draw solvent from the reservoir through said inlet means and dispense solvent through said outlet means, a wiper and washer holder supported on the vehicle adjacent the headlamp for pivotal movement between first and second positions at opposed locations with respect to the headlamp, a wiper blade on said holder adapted to wipe the surface of the lens during said movement, nozzle means on said holder fluidly connected to the outlet means of the pump means, fluid motor means operated by fluid pressure for moving the holder from said first position to said second position, spring means for returning said holder from said second position to said first position, and operator actuated switch means having an electrical switch portion for energizing the pump means for delivering solvent to said nozzle means for distribution on the lens as the wiper blade moves toward said second position, a fluid switch portion for connecting the fluid motor means with said source of fluid pressure to move the holder to the second position and actuating means for mechanically simultaneously actuating both said electrical switch portion and said fluid switch portion, whereby solvent is distributed on said lens from the nozzle means as the fluid motor means moves the holder to the second position and wiped therefrom by the blade as said spring means returns the holder to the first position.

3,939,524
WINDSCREEN WIPERS

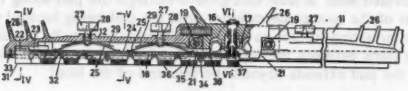
Robert Edgar Knights, 180, Park Farm Drive, Allestree, Derbyshire, England

Filed Oct. 30, 1972, Ser. No. 301,736

Claims priority, application United Kingdom, Nov. 2, 1971, 50931/71

Int. Cl. B60s *1/52, 1/38*

U.S. Cl. 15—250.04 **11 Claims**



9. A windscreen wiper comprising a reciprocable arm a blade carrier pivotally mounted on the said arm, a flexible blade element mounted on the carrier by means of variable rate springs means, and wind-responsive means adapted to vary the rate of the said spring means to counteract wind lift effects on the blade element.

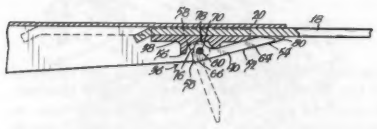
3,939,525
LOCKING PLATE FOR ADJUSTABLE ARMS

Donald W. Stratton, St. John, Ind., assignor to The Anderson Company, Gary, Ind.

Filed Jan. 6, 1975, Ser. No. 538,964

Int. Cl.² B60S *1/32*

U.S. Cl. 15—250.35 **3 Claims**



3. In a windshield wiper arm having a channel-shaped section pivotally carried by an attaching section, and an elongate arm extension member extending into the outer end of said channel-shaped member, in the combination, an elongate non-metallic latching shim nested in said channel-shaped member and having an upper portion shaped to partially surround the one end portion of the arm extension, lever means pivotally connected between the side walls of the channel-shaped member, said shim having a hollowed-out lower portion forming a bearing surface in alignment with said lever means, and eccentric means on said lever in engagement with the bearing surface on said hollowed-out portion of said locking shim whereby said eccentric on said lever either locks the shim and arm extension relative to the channel member or permits the arm extension to be moved relative to the channel member.

3,939,526
CLEANING DEVICE FOR FLANGED REELS

Max Joachim Mania, Eckartsweier, and Albrecht Weidmann, Offenburg, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 30, 1974, Ser. No. 493,055

Claims priority, application Germany, Aug. 1, 1973, 2338939

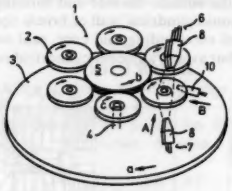
Int. Cl.³ A47L *5/38*

U.S. Cl. 15—306 B **7 Claims**

1. A device for cleaning from the surfaces of flanged reels, especially magnetic tape reels, dust and dirt particles, said device comprising:

a means for conveying the reels along a path of gas nozzles in such a position that both outer flange surfaces, both inner flange surfaces and the hub surfaces of said reels are accessible by several jets of cleaning gas leaving said gas nozzles, whereby each gas nozzle is capable of and suitably arranged for directing a jet of gas onto a surface of said reels as they are conveyed and the impacting of said gas on said surface removes said dust and dirt particles therefrom;

said path of gas nozzles comprising at least three groups of gas nozzles, each group consisting of at least one gas nozzle, the first and second groups of gas nozzles being respectively positioned along said path to direct gas onto



each of said outer flange surfaces of said reels and the third group being positioned along said path to direct gas onto both of said inner surfaces and the hub of said reels;

a means for ionizing the jets of cleaning gas whereby the static charge on the surfaces of said reels is neutralized so as to enable the easy removal of dust and dirt particles therefrom by said cleaning gas; and

a suction device for withdrawing the dust and dirt particles as they are removed from the vicinity of the cleaned surfaces.

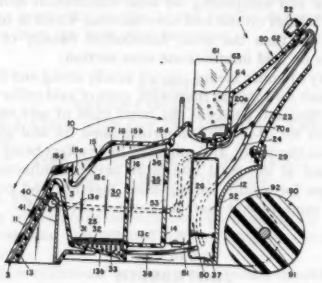
3,939,527
PORTABLE SURFACE CLEANER

Terry H. Jones, Norman, Okla., assignor to Clarke-Gravely Corporation, Muskegon, Mich.

Filed Oct. 12, 1973, Ser. No. 405,819

Int. Cl.² A47L *7/00*

U.S. Cl. 15—353 **8 Claims**



7. A portable surface cleaning apparatus comprising: a housing defining a used cleaning fluid recovery chamber having front and rear walls and an open top; means on said housing for facilitating said housing over the surface to be cleaned; a suction nozzle on said housing adjacent said front wall of and opening into the top of said recovery chamber; a passageway generally at the rear of said recovery chamber and including an opening through said rear wall of said recovery chamber; blower means positioned within said housing at the rear of said recovery chamber behind said rear wall of said recovery chamber and in flow communication with said recovery chamber through said passageway and said opening for effecting the rapid evacuation of air from said recovery chamber, causing a large volume of air and used cleaning fluid to be drawn

through said suction nozzle; a shield extending upwardly from the bottom of said recovery chamber in front of and spaced from said rear wall and from said blower means for preventing liquid from being drawn into said blower means; pump means positioned within said housing adjacent said recovery chamber and in flow communication with said recovery chamber for pumping liquid and suds out of said recovery chamber; a conduit operably connected to said pump means through which liquid and suds can be pumped to a discharge point remote from said housing; a cover removeably mounted on the top of said housing over the open top of said recovery chamber, said cover defining a first baffle at the top of said recovery chamber, adjacent and to the rear of said opening of said suction nozzle into said recovery chamber whereby air and used cleaning fluid being drawn through said nozzle and into said recovery chamber are directed downwardly into said recovery chamber by said first baffle.

3,939,528

VEHICLE FOR CLEANING PAVEMENTS

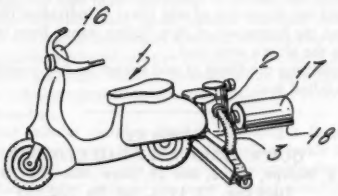
Igal Mossinsohn, 24, Spinoza St., Tel-Aviv, Israel

Continuation-in-part of Ser. No. 271,927, July 14, 1972, abandoned. This application May 13, 1974, Ser. No. 469,152

Claims priority, application Israel, July 21, 1971, 37363

Int. Cl.² A47L *9/00*

U.S. Cl. 15—340 **4 Claims**



1. A light, versatile vehicle for cleaning narrow passages, comprising:

a. two wheels secured to the vehicle, which comprise the sole support for the vehicle, and which are arranged in tandem fashion, the forward wheel being steerable,

b. at least one elongated rectangular funnel pivotably fastened to a side of the vehicle at the rear part thereof,

c. a dust collecting container carried on the vehicle and removably connected to the rear part thereof behind said at least one funnel,

d. a vacuum pump and a motor for operating the same, both mounted onto the vehicle,

e. means associated with the pump for providing communication between the said at least one funnel and the container,

f. means for deflecting the said at least one funnel up to an angle of 90 ° relative to the longitudinal axis of the vehicle, and

means for retracting the said at least one funnel upon encountering an obstruction to lie adjacent the side of the vehicle.

whereby the vehicle is capable of moving in sharp curves while cleaning sidewalks, narrow passages and insides of containers.

3,939,529

WINDOW OR THE LIKE STAYS

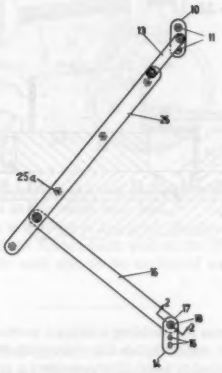
Ronald Percival Davis, Wellington, New Zealand, assignor to Interlock Industries Limited, Wellington, New Zealand

Filed Mar. 14, 1974, Ser. No. 451,197

Claims priority, application New Zealand, Mar. 16, 1973, 170109

Int. Cl.² E05D *15/58, 7/04*

U.S. Cl. 16—179 **7 Claims**



1. A window stay for swingably mounting a window sash on a window frame, said stay comprising two mounting plates, two arms each of which is pivoted at one end to a said mounting plate, a single mounting plate to which the other end of each arm is pivotally mounted, at least one of the pivot joints at the ends of said arms being a wear resistant friction joint, said mounting plates having openings therethrough for securing said mounting plates to one of said frame and sash, and said single mounting plate having openings therethrough for securing said single mounting plate to the other of said frame and sash.

3,939,530

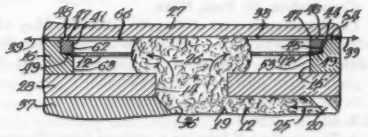
MOLDING APPARATUS

Harry H. Holly, Olympia Fields, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed Feb. 21, 1974, Ser. No. 444,299. The portion of the term of this patent subsequent to Mar. 11, 1992, has been disclaimed.

Int. Cl.² A22C *7/00*

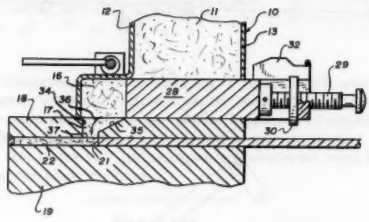
U.S. Cl. 17—32 **21 Claims**



17. For use in an apparatus for pressure shaping articles from a moldable material, a combined mold and valved air vent means, comprising: a mold plate having opposite plate surface means and a mold opening extending through the plate, one of said surface means comprising an air vent for directing air from said opening under the pressure of an entering pressurized charge of said material, said opening being defined by a peripheral edge surface; a rigid valve within said opening at said edge surface; means mounting said valve for movement relative to said edge to vent closing position when said valve is subjected to said entering material; and means on

said plate for retaining said valve in normally open vent position when said mold opening is substantially empty.

3,939,531
MOLDING DEVICE
James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.
Filed May 9, 1973, Ser. No. 359,199
Int. Cl.² A22C 7/00
U.S. Cl. 17—32 **7 Claims**

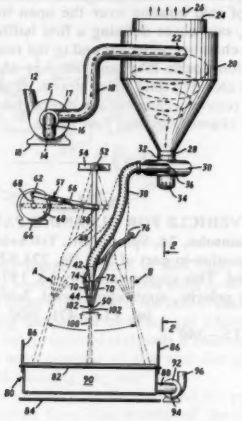


1. Apparatus for molding a shaped portion of a plastic food material that tends to shrink during cooking and the like, comprising: supply means for providing a supply of said plastic material; a mold having a shaping cavity with a peripheral edge for forming said shaped portion; spaced wall means forming a supply passage from said supply means to said cavity; and pressure means at one side of said supply passage for applying pressure to said plastic material supply and thereby forcing said material in a stream through said passage and into said cavity at said cavity edge for filling the cavity, said wall means supply passage externally of and adjacent to said shaping cavity having a first side opposite to said pressure means generally parallel to the general direction of said stream entering said cavity and a second side adjacent to said pressure means angled toward said cavity and said one side, said first and second sides forming a converging included angle of about 50°–65° and said wall means supply passage having a width at said cavity of about 5/16–7/16 inch, said first and second wall sides and said supply passage width in combination with said pressure means comprising means for tumbling and kneading said food material during its flow into said cavity.

3,939,532
MANUFACTURE OF FIBROUS WEB STRUCTURES
Donald E. Wiegand, Minneapolis, Minn., assignor to Conwed Corporation, St. Paul, Minn.
Continuation-in-part of Ser. No. 253,098, May 15, 1972, abandoned, which is a continuation-in-part of Ser. No. 46,594, June 16, 1970, abandoned. This application Oct. 19, 1973, Ser. No. 407,934
Int. Cl.² D01G 25/00
U.S. Cl. 19—156.3 **5 Claims**

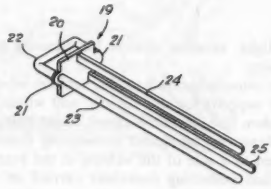
1. The method of forming a uniform felted fibrous structure by projecting an air fiber stream of fibers from a nozzle for collection on a collecting screen having edges comprising:

a. selecting cellulosic type fibers having a length of 0.25 inch or less;
b. forming a relatively dilute air suspension of substantially individualized fibers in which at least about one-half of the fibers are the said selected fibers having a length of 0.25 inch or less;
c. subsequently concentrating said air-fiber suspension by removing air therefrom;
d. selecting a nozzle configuration for projecting said suspension as a jet stream;
e. oscillating said nozzle;
f. projecting said suspension of fibers from said selected nozzle as a jet stream at a linear velocity of at least 2,000 feet per minute toward the collectng screen and without said suspension of fibers passing over the edges of the collecting screen;
g. applying a suction to the opposite side of said screen;
h. correlating the selected nozzle configuration to the distance betweeen the nozzle outlet and screen;



i. positioning the screen at a selected correlated distance from the nozzle to maintain the integrity of said stream and the dispersion of said fibers as individual fibers without the formation of clots during transit from the nozzle to the scrren area; and
j. collecting the fibers of said stream on said screen to form a felted mat.

3,939,533
QUICK-REMOVABLE BAG CLOSURE
John A. Benepe, Rte. 2, Box 23, Shaw, Miss. 38773
Filed Dec. 13, 1974, Ser. No. 532,733
Int. Cl.² B65D 33/16, 77/10
U.S. Cl. 24—30.5 R **9 Claims**



8. A quickly attachable and detachable closure clip for a flexible hopper bag spout such as used for loading agricultural aircraft, or the like, comprising a rigid thin plate member, an elongated guide rod considerably longer than any dimension of said plate member and of sufficient length to completely span the width of and be received in the fold of a bag spout when such spout is flattened and folded upwardly, said guide rod being rigidly secured to said plate member to extend substantially perpendicular thereto from one side surface thereof, a pair of similarly elongated gripping bar elements rigidly secured to the same side of said plate member and extending substantially parallel to said guide rod, spaced upwardly therefrom and located on opposite sides thereof, and

a handle member projecting outwardly from the opposite side of said plate member, whereby a folded flexible hopper bag spout may be grippingly received between said gripping bar elements to close the bag spout and the bag spout may be quickly released to a depending opening condition when the clip is disengaged therefrom.

3,939,534

WRISTBAND CONNECTOR WITH INTEGRAL PINS

Robert R. Hayes, Euclid, Ohio, assignor to Cole National Corporation, Cleveland, Ohio

Filed Jan. 28, 1975, Ser. No. 544,857

Int. Cl.² A44C *5/18*

U.S. Cl. 24—265 B **5 Claims**

1. A wristband connector comprising:

an outer tubular member having at least one radially inwardly extending projection near an end of the tubular member and a lug slot which extends longitudinally along the outer tubular member;

at least one inner tubular member having an outside diameter slightly less than the inside diameter of the outer tubular member, said inner tubular member having a guide slot which cooperates with and slidably receives the projection to prevent relative rotation of the inner tubular member and outer tubular member while permitting the inner tubular member to telescope inside the outer tubular member;

the inner tubular member further including a finger lug extending outwardly therefrom which slides inside the lug slot in order to provide a means for moving the inner tubular member while in the outer tubular member;

a pin integral with and extending longitudinally outwardly from the inner tubular member so that the wristband connector may engage a receptacle in a wristband, biasing means inside the outer tubular member and secured between the outer tubular member and inner tubular member to bias outwardly the inner tubular member; and

means for holding one end of a wristband spaced from the outer tubular member, said means for holding being operatively attached to the outer tubular member.

3,939,535

TUBE FASTENER

Norio Matsuura, 4-12 Nishishoji 4-chome, Minou, Osaka, Japan

Filed Mar. 18, 1975, Ser. No. 559,538

Claims priority, application Japan, Nov. 30, 1974, 49-137871

Int. Cl.² B65D *63/06*

U.S. Cl. 24—283 **6 Claims**

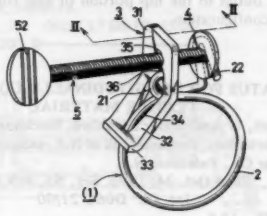
1. A fastener comprising:

a. a clamping wire comprised of a spring wire wound in a ring shape, with the ends intersecting each other and projected upward;

b. a supporting plate with a through-hole, in contacting relation with one end of the clamping wire;

c. a holding plate having a vertical element with the lower end thereof bent and extended upward, the vertical element having a screw hole at the center of the upper portion thereof, and adapted to hold the other end of the clamping wire in an anchored fashion thereto;

d. a screw shaft threaded through the screw hole of the holding plate, with one end thereof being stayed by the supporting plate, rotationally supported in the aforementioned through-hole, and being provided with a rotational driving means at the other end; and



e. wherein a slit is located in the lower portion of the holding plate, and the folded-back end of the clamping wire is inserted into said slit, to be anchored to the vertical piece.

3,939,536

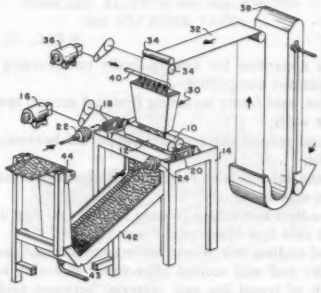
APPARATUS FOR IMPARTING A RANDOM WRINKLED OR CRUSHED APPEARANCE TO PILE FABRICS

Charles R. Ruppe, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 346,679, March 30, 1973, abandoned, which is a continuation of Ser. No. 157,965, June 29, 1971, abandoned. This application Nov. 6, 1974, Ser. No. 521,354

Int. Cl.² D06C *23/04*

U.S. Cl. 26—2 R **5 Claims**



1. Apparatus for imparting a crushed appearance to pile fabrics comprising a pair of compression rolls for applying a compressive force to a moving length of fabric fed therebetween, means mounting said compression rolls for rotation in side by side relation with an upwardly facing nip portion between said rolls for receiving fabric fed thereto, means positioned above said nip portion of said rolls for accumulating a moving length of fabric and for continuously gravitationally feeding the accumulated fabric into the nip portion of said rolls, and means for continuously feeding fabric to said fabric accumulating means to maintain an accumulation of fabric therein; said accumulating means including two opposed pairs of sidewalls extending downwardly toward said rolls and defining a fabric accumulating compartment of substantially rectangular cross-section, said compartment having an upper fabric inlet for receiving fabric from said feeding means and a lower fabric outlet positioned directly above and closely

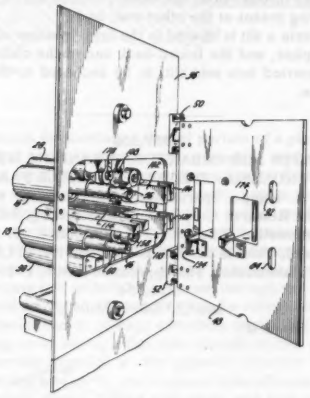
adjacent the nip portion of said rolls for continuously gravitationally discharging the accumulated fabric to the rolls, each of the opposed pairs of said sidewalls continuously converging downwardly from said inlet to said outlet to permit random folding of the accumulating fabric in said compartment in lengthwise and widthwise direction for gravitational discharge from said outlet to the nip portion of said rolls in randomly bunched configuration.

3,939,537

APPARATUS FOR LONGITUDINALLY COMPRESSING TEXTILE MATERIAL

John Kreeft, Wykoff; Peter Stanislaw, Stockhom, and Rudolph G. Gulbrandsen, Demarest, all of N.J., assignors to Morrison Machine Co., Paterson, N.J.

Filed Oct. 24, 1973, Ser. No. 409,052
Int. Cl.[2] D06C *21/00*
U.S. Cl. 26—18.6 **37 Claims**



1. An apparatus for longitudinally compressing material, said apparatus comprising:

a frame, said frame including first and second spaced apart side walls;

first and second drive rollers supported between said side walls;

first and second idler roller assemblies supported between said side walls;

first endless belt means passing around said first drive roller and said first idler roller assembly;

second endless belt means passing around said second drive roller and said second idler roller assembly to define a path of travel for said material between said first and second endless belt means;

drive means for rotating said drive rollers whereby said first and second endless belt means will be moved with respect to the material passing therebetween, the material being longitudinally compressed in transit during said path of travel between said first and second endless belt means;

said second side wall having an opening therethrough and closure means movable between a closed and open position with respect to said opening, said closure means supporting one end of said first and second drive rollers and first and second idler roller assemblies when said closure means is in its closed position;

means for supporting said first and second drive rollers and said first and second idler roller assemblies in a cantilever arrangement on said first wall when said closure means is moved to said open position whereby said first and second endless belt means may be removed.

28. An apparatus for longitudinally compressing material; said apparatus comprising:

a frame, said frame including first and second spaced apart side walls;

first and second drive rollers supported between said side walls;

first and second idler roller assemblies supported between said side walls;

first endless belt means passing around said first drive roller and said first idler roller assembly;

second endless belt means passing around said second drive roller and said second idler roller assembly to define a path of travel for said material between said first and second endless belt means;

drive means for rotating said drive rollers whereby said first and second endless belt means will be moved with respect to the material passing therebetween, the material being longitudinally compressed in transit during said path of travel between said first and second endless belt means;

first tension roller means engaging said first endless belt means;

second tension roller means engaging said second endless belt means;

first support means carried on the inner surface of said second side wall for adjustably carrying one end of said first tension roller means to permit selective vertical movement thereof; and

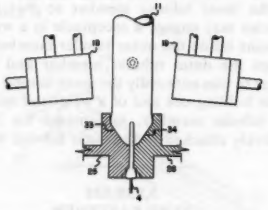
second support means rotatably carried on the inner surface of said first side wall for adjustably carrying the other end of said first tension roller means so as to permit both rotational and vertical movement thereof.

3,939,538

METHOD OF MAKING DISCHARGE LAMP HAVING BLOW-MOLDED ARC TUBE ENDS

Wayne R. Hellman, Euclid; Klaus Gottschalk, Solon, and Edward C. De George, South Euclid, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 374,566, June 28, 1973, Pat. No. 3,870,919. This application Nov. 11, 1974, Ser. No. 522,825
Int. Cl.[2] H01J *9/00*
U.S. Cl. 29—25.11 **6 Claims**



1. In a method of making an electric arc tube the improvement which comprises:

placing an end of a tube of vitreous quartzlike material of a given diameter around an inlead conductor;

heating said end to plasticity while flowing an inactive gas through the tube;

compressing said end to seal the material about the inlead;

forming a mold about the tube next to the compressed end;

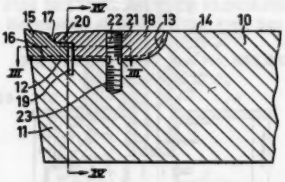
and pressurizing said tube with inactive gas in order to expand the region of the tube next the compressed end into the mold to a diameter greater than said given diameter whereby to achieve an end chamber of constant size and shape.

3,939,539

CUTTING TOOL HOLDER

Arne Novak, Sollentuna, Sweden, assignor to Wlajko Mihic, Gavle, Sweden

Filed Apr. 2, 1975, Ser. No. 564,396
Claims priority, application Sweden, Apr. 8, 1974, 74047184
Int. Cl.² B26D 1/00
U.S. Cl. 29—96 8 Claims



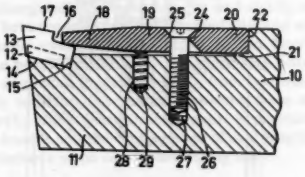
1. A cutting tool holder including a holder body, a changeable cutting bit insert and a clamping means, the holder body having a generally horizontal, slender, section-profiled seat whose upper surface is below the upper surface of the holder body and intended to support the insert in its front part while the rear part supports the clamping means, characterized by: the part (13) connecting said upper surface of the seat with the upper surface (14) of the holder body having the same profiled shape as the horizontal part of the seat, and the clamping means having a shape corresponding to the seat and the connecting part.

3,939,540

CUTTING BIT HOLDER WITH REVERSIBLE CLAMP

Arne Novak, Sollentuna, Sweden, assignor to Wlajko Mihic, Gavle, Sweden

Filed Apr. 2, 1975, Ser. No. 564,397
Claims priority, application Sweden, Apr. 8, 1974, 74047176
Int. Cl.² B26D 1/00
U.S. Cl. 29—96 5 Claims



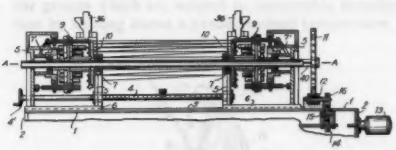
1. A cutting tool holder including a holder body having an extended slender part (11) and a seat (12) intended to receive a detachable cutting bit (13) fastened to the body by a clamping device (19), characterized by: the clamping device, in relation to a vertical plane longitudinally bisecting the slender part (11), being unsymmetrical and being L-shaped, with one leg being substantially the same width as the slender part and one end of such leg abutting the bit while the other leg is accommodated in a recess in the front part of the holder body with the rear end of said other leg pressed against a shoulder formed in the recess, the recess extending over the entire width of the holder body, whereby the clamping device in a first position can be placed on a holder body having a cutting bit to the left of the longitudinal centerline of the holder body and in a second, reversed position can be placed on a holder body where the citting bit is to the right to said centerline.

3,939,541

MACHINE FOR MANUFACTURING, IN A CONTINUOUS AND AUTOMATIC CYCLE, STRINGS OF LIGHTS FOR MICROLAMPS

Dino Magherini, Via Osservatorio 36, Firenze, Italy

Filed June 11, 1974, Ser. No. 478,399
Claims priority, application Italy, June 13, 1973, 9501/73; May 31, 1974, 9466/74
Int. Cl.² H01R 43/00
U.S. Cl. 29—203 R 14 Claims



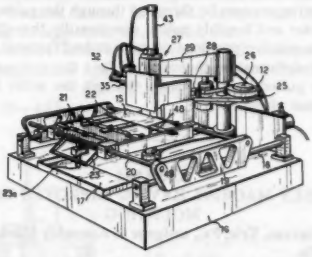
1. Apparatus for continuously and automatically manufacturing strings of sockets for microlamps wherein the sockets are moulded onto an insulated flexible single wire cable, said apparatus comprising: (a) deflecting means for forming a series of bights in said cable; (b) socket applying means for securing sockets to said cable at successive bights thereof; and (c) tail forming means for forming a tail in said cable following the securement of a predetermined number of sockets thereto, said tail providing the end of one string of sockets and the beginning of a subsequent string.

3,939,542

METHOD FOR INSERTING CONNECTING PINS IN A PRINTED CIRCUIT AND MACHINE FOR EXECUTING SAID METHOD

Romano Reggi, Lugo, Italy, assignor to COMATEL — Comptoir Europeen de Materiel Electronique, Issy les Moulineaux, France

Filed Jan. 21, 1974, Ser. No. 435,309
Int. Cl.² H05K 13/00
U.S. Cl. 29—203 B 8 Claims



1. A machine for inserting connecting pins into predetermined locations of a printed circuit, comprising a first conveying channel for conveying a plurality of pins, means for feeding succession of pins into said channel each said pin being parallel to each adjacent pin and being aligned transversely to the conveying direction of the conveying channel, a spool carrying an adhesive strip, means for leading said strip off the spool along a path adjacent the pins in the conveying channel means for bringing the said strip into adhesive contact with the pins whereby the pins become adhered to said strip and form a pin-carrying strip, a take-up spool for the pin-carrying strip, means for feeding the pin-carrying strip over a pre-determined path towards the printed circuit and stripping the pins near the end of said path off the strip to allow them to be inserted in succession into the desired locations of the circuit, and means for inserting the pins in the desired locations.

3,939,543

SLIDER HOLDER FOR ATTACHING A SLIDER TO A FASTENER CHAIN SECURED TO AN ARTICLE

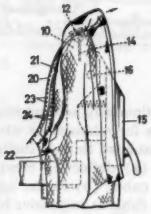
Hiroshi Yoshida, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 387,192, Aug. 9, 1973. This application Oct. 9, 1974, Ser. No. 513,266

Claims priority, application Japan, Aug. 12, 1972, 47-80897

Int. Cl.[2] B21D *53/50;* B29D *5/00*

U.S. Cl. 29—207.5 SL 2 Claims



1. A slider holder for use in attaching a slider having a pair of guide channels to a pair of fastener stringers which are already secured to an article, wherein the fastener stringers are provided along a pair of opposed inside edges thereof with rows of fastener elements capable of elastic deformation, said slider holder comprising: a support structure having a slider mount on a top portion thereof, said slider mount having a top surface which is inclined at an angle to the plane of the horizon for receiving and positioning the slider upside down with the bottom end thereof directed downwardly; and means for locking the slider in position on said slider mount, whereby the fastener stringers may be threaded through the guide channels in the slider and forcibly pulled downwardly therethrough to adjust the relative positions of mismatched fastener elements by elastic deformation thereof, and then the stringers may be smoothly pulled back upwardly through the slider to engage the fastener elements.

3,939,544

ASSEMBLY MACHINE HAVING IMPROVED TOOLING MOUNTING

Donald Stevens, Erie, Pa., assignor to Assembly Machines, Inc., Erie, Pa.

Filed Jan. 24, 1975, Ser. No. 543,678

Int. Cl.[3] B23P *19/04*

U.S. Cl. 29—208 F 17 Claims

1. An assembly machine for use in manufacturing an article comprising:

a rotatable assembly table on which at least a portion of the article to be assembled can be positioned at selected locations;

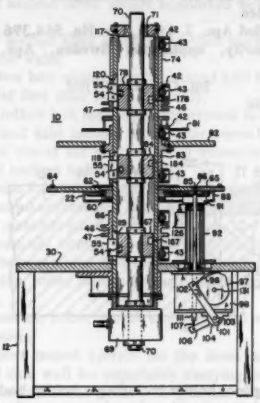
a plurality of work stops located at predetermined positions around said rotatable assembly table;

indexing means connected to said rotatable assembly table for rotating said rotatable assembly table a predetermined distance at repeatable intervals;

an upper tooling mount disposed above said rotatable assembly table on which tooling can be mounted;

first tooling driver means disposed above said rotatable assembly table;

a lower tooling mount located beneath said rotatable assembly table on which tooling can be mounted; and,



second tooling driver means disposed between said rotatable assembly table and said lower tooling mount.

3,939,545

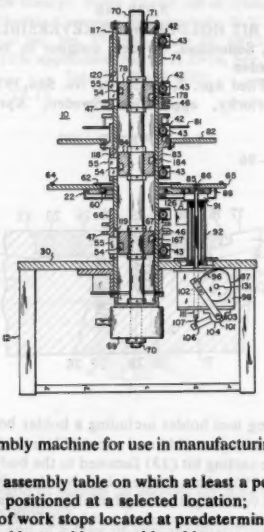
ASSEMBLY MACHINE ACTUATOR

Donald S. Stevens, Erie, Pa., assignor to Assembly Machines, Inc., Erie, Pa.

Filed Jan. 24, 1975, Ser. No. 543,679

Int. Cl.[2] B23P *19/04*

U.S. Cl. 29—208 F 20 Claims



1. An assembly machine for use in manufacturing an article comprising:

a rotatable assembly table on which at least a portion of the article is positioned at a selected location;

a plurality of work stops located at predetermined positions around said rotatable assembly table;

indexing means connected to said rotatable assembly table for rotating said rotatable assembly table a predetermined distance at repeatable intervals;

a tooling mount located above said rotatable assembly table upon which tooling which performs operations on the article can be mounted;

a reciprocating actuator driver mounted above said rotatable assembly table for supplying power to tooling which can be located on said upper tooling mount;

an actuator engaging said actuator driver for transmitting power to tooling which can be mounted to said upper tooling mount; and,

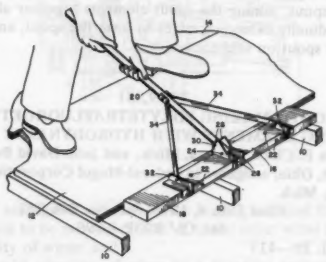
said actuator comprising a first lever, a second lever, and a spring clamping means for maintaining said first lever and said second lever to move in unison as long as said second lever is subjected to forces below a predetermined overload level.

3,939,546

TOOL FOR SETTING JOINTED FLOORING PANELS

Ralph G. Hernandez, 4070 Huerfano Ave., San Diego, Calif. 92117

Filed Aug. 7, 1974, Ser. No. 495,438
Int. Cl.² B25B 27/02
U.S. Cl. 29—278 1 Claim



1. A tool for setting jointed flooring panels by impact comprising:

a. a bracket of generally L-shaped lateral cross section;

b. an elongated length of lumber having a flat leading edge and a flat trailing edge, said length of lumber being mounted in said L-shaped bracket such that one of the angulated portions thereof engages the trailing edge of said length of lumber;

c. a plurality of generally L-shaped support ribs longitudinally spaced along and mounted to said L-shaped bracket, two of said ribs being located generally centrally of said bracket;

d. an elongated handle having one end rigidly mounted to and between said centrally located ribs and extending at an angle over the trailing edge of said board and in a plane perpendicular to the length of said board;

e. two angulated braces extending from said handle in generally opposite direction to respective ones of said ribs, whereby three point direct support is provided between said handle and the trailing edge of said length of lumber to reinforce same on impact during use.

3,939,547

METHOD OF PRODUCING A DYEABLE COATING ON METAL ARTICLE

Lornie J. Bernier, Guys Mills, and Tapan K. Das, Meadville, both of Pa., assignors to Textron, Inc., Providence, R.I.

Filed Aug. 28, 1974, Ser. No. 501,371
Int. Cl.² B21D 53/50; B29D 5/00
U.S. Cl. 29—408 5 Claims

1. A method of producing a color dyed non-metal article and attached matching metal element comprising the steps of

forming a polymerized film containing a substantial quantity of active proton acceptor groups on the metal element,

attaching the metal element to the article, and

subjecting the article and the polymerized film on the attached metal element to an aqueous dye solution to produce a color-dyed article with a color matching metal element.

5. A method of forming a colored slide fastener having stringers and a metal slider comprising the steps of

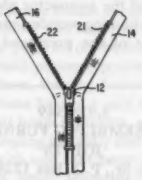
treating the slider to form an adherent surface on the slider,

dipping the slider into a liquid solution containing an uncured phenol aldehyde resin,

spinning the slider to remove excess liquid solution and form a film having a thickness less than about 13 microns,

heating the slider to cure the phenol aldehyde film,

electrostatically forming on the slider a coating of a powdered solid polymer resin having an average particle size less than about 200 microns and containing proton acceptor groups which are subject to irreversible transformation by heating above a predetermined temperature,



heating the coating sufficiently to convert the coating into a coherent polymer film but below the predetermined temperature and for less than a predetermined duration to allow a substantial quantity of the proton acceptor groups to remain untransformed,

assembling the slider on fastener elements of a pair of stringer tapes which are made from a textile material selected from the group consisting of polyester fabric and nylon fabric, and

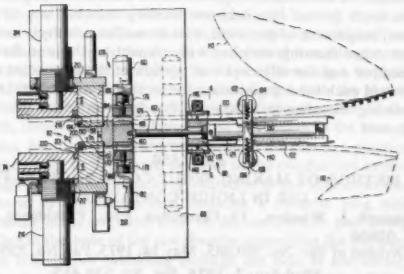
dyeing the slider and pair of stringer tapes to form a colored slide fastener.

3,939,548

METHODS FOR FABRICATING WOODEN FRAMES AND THE LIKE

John Calvin Jureit, Coral Gables; Roy Leutwyler, Miami; Larry Brodsky, Miami; Benjamin Kushner, Miami, and Adolfo Castillo, Miami, all of Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Division of Ser. No. 317,095, Dec. 20, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,443
Int. Cl.² B23P 11/00
U.S. Cl. 29—432 25 Claims



1. A method for joining a pair of wooden members by applying a sheet metal connector plate, of the type having integrally struck teeth projecting from one side thereof, to the wooden members at their juncture comprising the steps of:

providing a coil of connector stock of the type having integrally struck teeth projecting from one side thereof,

feeding the connector stock from the coil into the path of movement of a presshead carrying a cutting edge thereby defining relative to the cutting edge a predetermined line of cut along the connector stock,

providing a reaction surface cooperable with the cutting edge and comprised of a plurality of tines defining a plurality of laterally spaced recesses;

guiding the teeth of the stock along the recesses as the stock is fed into the path of movement of the presshead;

displacing the presshead to engage the cutting edge and reaction surface tines along opposite sides of the stock and along its predetermined line of cut and, upon continued displacement of the presshead, cutting the stock to form a connector plate of predetermined length, and

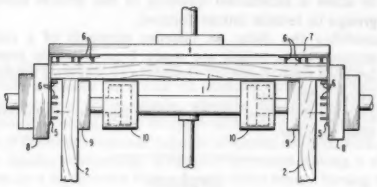
pressing the teeth of the connector plate thus formed into one side of the adjoining wooden members upon continued displacement of the presshead in the same stroke thereof.

3,939,549

PROCESS OF ASSEMBLING FURNITURE CORNER JOINTS

William W. Masengill, Sr., P.O. Box 1520, Morristown, Tenn. 37814

Filed Nov. 14, 1974, Ser. No. 523,872
Int. Cl.² B23P *11/00*
U.S. Cl. 29—432 **4 Claims**



1. A method of making a furniture corner joint between framing members in planes set at an angle to each other comprising placing over the corner a toothed connector plate having end portions disposed at an angle to each other corresponding with the framing members, each end portion having integral teeth struck out from the body of the plate over substantial areas thereof normal to the plane of the respective end portions and normal to the plane of the adjacent framing member, relatively moving one of the framing members with respect to the other framing member and the adjacent end portion of the connector plate toward each other penetrating the teeth thereof into said one framing member in a straight line, lengthwise of the teeth, and thereafter relatively moving the other framing member with respect to the one framing member and the adjacent end portion of the connector plate toward each other penetrating the teeth thereof into said other framing member in a straight line lengthwise of the teeth thereof.

3,939,550

METHOD OF MAKING SPOUT CONSTRUCTION FOR USE IN LIQUID CONTAINERS

Samuel J. Winslow, 19 Clarendon Ave., Providence, R.I. 02906

Division of Ser. No. 359,885, May 14, 1973, Pat. No. 3,893,601
Filed Jan. 3, 1975, Ser. No. 538,419
Int. Cl.² B23P *3/00*, *25/00*
U.S. Cl. 29—458 **6 Claims**

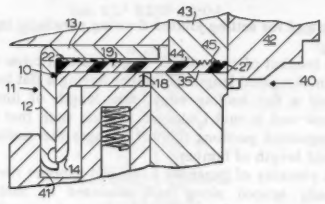
1. A method of forming a spout for use in a liquid container, comprising the steps of forming a pair of complementary spout elements into longitudinally extending sections, wherein each section extends the length of said spout and is formed with a concave inner surface so that a through passage is defined by said sections when they are located in the joined position thereof, coating the concave inner surface of each section with a plating material prior to joining said sections together for eliminating any deleterious effects of the material from which said sections are formed when the container is in use and liquid in the container is poured through the passage in the spout, joining the spout elements together along their longitudinally extending edges to form the spout, and mounting the spout on said container.

3,939,551

METHOD OF MAKING POLYTETRAFLUOROETHYLENE SEALING ELEMENTS WITH HYDRODYNAMIC ACTION

William E. Clark, Chelsea, Mich., and John David Butler, Van Wert, Ohio, assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Feb. 4, 1975, Ser. No. 546,882
Int. Cl.² B23P *17/00*
U.S. Cl. 29—417 **15 Claims**



1. A method for manufacturing an oil seal having an element made from a disc-like flat washer of polytetrafluoroethylene or the like having an outer circular rim and a generally concentric inner circular rim, comprising the steps of:

assembling the washer into a metal case between an outer case member having a cylindrical wall and an inner case member, and

then coining one face of each said washer to provide, adjacent said inner rim, hydrodynamic means for returning oil.

3,939,552

METHOD AND APPARATUS FOR FEEDING A PAIR OF WIRES

Granville Spencer Hart, and Joseph Edward Brandewie, both of Clearwater, Fla., assignors to AMP Incorporated, Harrisburg, Pa.

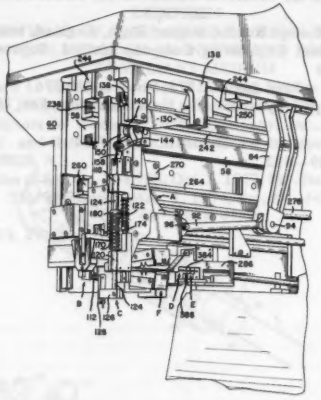
Filed Nov. 26, 1974, Ser. No. 527,512
Int. Cl.² B23P *19/02*
U.S. Cl. 29—427 **25 Claims**

1. A method for feeding a plurality of wires of differing lengths to a receiving station, said method comprising the steps of:

initially supporting the leading end portion of each of a plurality of wires at a first location, each of said plurality of wires being initially interconnected to a source of supply;

engaging the leading end portion of each of said plurality of wires and simultaneously moving the leading end portion of each of said plurality of wires away from said first location to a second location adjacent a receiving station;

engaging an intermediate portion of a selected wire after the leading end portion of each of the plurality wires has been moved away from said first location to cause the length



of the selected wire between the leading end and the first location to be increased relative to the other wires of said plurality of wires; and

cutting said plurality of wires at a location between the intermediate portion of the selected wire and the first location to cause the cut plurality of wires to be of differing lengths.

3,939,553

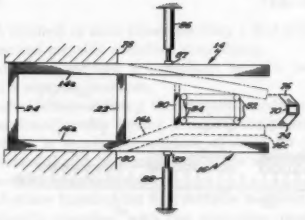
METHOD OF MANUFACTURING A TRAILER FRAME STRUCTURE

Leon G. Feterl, Salem, S. Dak., assignor to SOS Consolidated, Inc., Birmingham, Mich.

Division of Ser. No. 439,397, Feb. 4, 1974, Pat. No. 3,905,644. This application Apr. 17, 1975, Ser. No. 569,052

Int. Cl.² B23P *17/00*; B23K *31/00*; B62D *21/02*

U.S. Cl. 29—469 **3 Claims**



1. A method of fabricating a chassis structure for a truck trailer comprising the steps of:

securing a pair of elongated frame beams in place in laterally spaced, parallel relation to each other in a fixture with holding means bearing against the outside faces of said frame beams at rear end portions thereof, with the front ends of said frame beams unrestrained and spaced laterally, outwardly from a first set of laterally spaced stop members positioned between said frame beams adjacent the front end thereof and a second set of laterally spaced stop members positioned between said frame beams rearwardly from said first set of stop members in alignment therewith in a lengthwise direction with respect to said frame beams;

fastening a crossbar member between opposed bend points on said frame beams intermediate their ends;

applying opposed, laterally directed bending forces to the outside faces of said frame beams at opposed pressure points intermediate the front ends of said frame beams and said crossbar member in an inward direction and bending the front ends of said frame beams inwardly towards each other about said opposed bend points established by said crossbar member until the front ends of said frame beams engage said first set of stop members; thence

applying continuing, opposed bending forces at the same opposed pressure points in an inward direction on the outside faces of asid frame beams and further bending the front ends of said frame beams inwardly intermediate said first crossbar member and said first set of stop members until intermediate portions on the front ends of said frame beams adjacent said pressure points engage said second set of stop members, thereby forming a pair of laterally spaced frame beams having a pair of parallel, relatively widely spaced rear beam segments, a pair of intermediate beam segments angling inwardly and forwardly from their juncture points with said rear beam segments, and a pair of parallel, front beam segments extending forwardly from their juncture points with said intermediate beam segments and laterally spaced more closely together than said rear beam segments; and

fastening additional tie members between said frame beam members to rigidize said chassis structure.

3,939,554

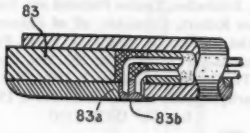
SURFACE THERMOCOUPLE

Philip F. Finney, Villa Park, Ill., assignor to Thermo-Couple Products Company, Inc., Winfield, Ill.

Division of Ser. No. 447,961, March 4, 1974, Pat. No. 3,874,239. This application Dec. 4, 1974, Ser. No. 529,405

Int. Cl.² B01J *17/00*

U.S. Cl. 29—573 **7 Claims**



1. The method of making a thermocouple assembly from a bulk length of sheathed thermocouple conductors wherein the bulk length includes a tubular metal sheath having a pair of thermocouple conductors therein held in spaced relation from each other and from the sheath by electrical insulating material, said method comprising the steps of forming a keyhole slot in the sheath at one end thereof aligned with the sheath axis with the hole of the slot spaced from the end of the sheath, removing the insulation from the sheath in the area of the slot, bending the conductors through the slot to a position at right angles to the sheath axis and so the conductors extend through the slot hole, packing insulation in the sheath around the bend of the conductors, inserting a ceramic plug with conductor holes over the ends of the conductors and fitting the plug in the hole of the slot thereby supporting the portions of the conductors extending through the hole in electrically insulated relation to each other and to the sheath, press fitting a solid metal plug into the end of the sheath at the slot and up against the insulation inserted at the bend of the conductors, fusion welding the conductors together outside the ceramic plug to form a thermoelectric junction, welding the metal plug to the sheath including filling the slot with weld, and forming a V-shaped welded pad on the sheath over the junction without voids in the weld material.

3,939,555

STRIP TYPE RADIATION DETECTOR AND METHOD OF MAKING SAME

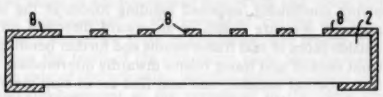
Ottomar Jantsch; Ingmar Feigt, both of Erlangen, and Wolf Rudiger Willig, Erlangen-Bruck, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 27, 1973, Ser. No. 374,019

Claims priority, application Germany, July 20, 1972, 2235680

Int. Cl.² B01J 17/00

U.S. Cl. 29—577 24 Claims



1. A method for making a detector for ionizing radiation which detector contains a plurality of strip-like electrodes on two flat sides of a semi-conductor body with the points of intersection each forming a detector to thereby provide spatial resolution comprising the steps of:

a. preparing an N conduction semi-conductor body having a resistivity of at least 100 ohm-centimeters so as to have two substantially flat sides;

b. forming by diffusion a plurality of P conduction elongated electrodes on one side of said semi-conductor in the form of parallel space strips and in such a manner that the PN junction at the surface of the semi-conductor material is covered by an oxide layer;

c. removing a portion of the semi-conductor material on the other side of the semi-conductor to thereby form a thin semi-conductor layer; and

d. providing a second plurality of elongated parallel spaced metal electrodes on said other side, said electrodes being at an angle to said electrodes on said first side.

3,939,556

LIQUID CRYSTAL CELL

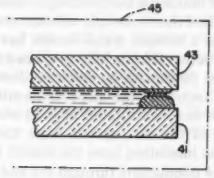
Joseph Borel, Echirolles; Louise Peccoud nee Toupillier, Claix, and Jacques Robert, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation-in-part of Ser. No. 302,396, Oct. 31, 1972, abandoned. This application June 7, 1974, Ser. No. 477,361

Claims priority, application France, Nov. 4, 1971, 71.39513

Int. Cl.² G02F 1/00

U.S. Cl. 29—592 2 Claims



1. Process for the manufacture of a liquid crystal cell having a film of liquid crystal between a first wafer, covered with a first system of electrodes and a second transparent wafer covered with a second system of transparent electrodes, the steps of mounting a system of electrodes on at least one of the wafers, depositing through a first mask on the periphery of the wafer a wall of controlled thickness, depositing through a second mask on at least one of the wafers a thread of material of low fusion point around a periphery corresponding to the periphery of the wall, applying the two wafers against each other and applying the thread on the top of the wall, connecting the two wafers to each other by heating the material of low point of fusion to the point of fusion, said step of depositing the wall including evaporation under vacuum in an enclosure of the material constituting the wall and said step of depositing said thread including evaporation under vacuum in said enclosure of the material of low point of fusion.

3,939,557

METHOD OF MAKING RESISTANCE THERMOMETER SENSORS

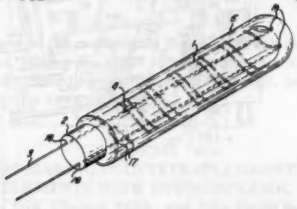
Kenneth George Rendle, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, Bognor Regis, England

Filed Jan. 9, 1975, Ser. No. 539,576

Claims priority, application United Kingdom, Feb. 19, 1974, 7521/74

Int. Cl.² H01C 7/02, 7/04

U.S. Cl. 29—612 10 Claims



1. A method of making a resistance thermometer sensor comprising the steps of providing a base of insulating material and, firmly attaching thereto a path of electrically conducting material with a temperature responsive coefficient of resistance, with at least a part of the length of the path configured as a loop, with two portions in side-by-side relationship and adjusting, along the length of the said portions, the position of a shorting bar connected across said two portions to provide a desired value of ice point resistance for the sensor and then fastening the shorting bar in this position.

3,939,558

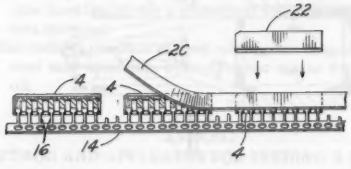
METHOD OF FORMING AN ELECTRICAL NETWORK PACKAGE

Richard E. Riley, Riverside, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Feb. 10, 1975, Ser. No. 548,326

Int. Cl.² H05K 3/28, 3/10

U.S. Cl. 29—627 8 Claims



1. The method of joining a substrate with a superstrate to form an electrical network package, said substrate bearing a network of electric circuit elements on one face, comprising the sequential steps of:

sandwiching a B-stage thermosetting adhesive material between said superstrate and the circuit-bearing face of said substrate,

heating the resulting sandwiched package sufficiently to initiate the formation of said B-stage material into a gel,

compressing said substrate and superstrate together sufficiently to cause said adhesive material to flow into sealing relation with said electric network,

releasing said compression, and

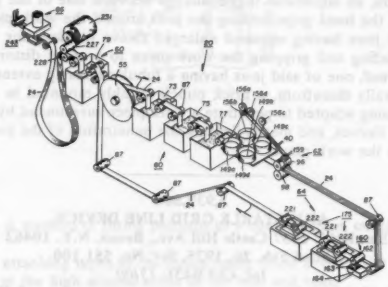
heating the resulting network package to substantially cure said adhesive material subsequent to releasing of said compression.

3,939,559

METHODS OF SOLID-PHASE BONDING MATING MEMBERS THROUGH AN INTERPOSED PRE-SHAPED COMPLIANT MEDIUM

Richard L. Fendley; Gerhard E. Hoenig; George Poehlmann, and John M. Prendergast, Jr., all of Indianapolis, Ind., assignors to Western Electric Company, Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 294,755, Oct. 3, 1972, Pat. No. 3,834,604.
This application Mar. 1, 1974, Ser. No. 447,419
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—628 13 Claims



1. A method of solid-phase bonding a first metallic member to a second metallic member, comprising:

solid-phase bonding a compliant metallic medium to the first metallic member;

simultaneously shaping the metallic medium into a cross-sectional profile having a raised compliant crest region which is smaller in surface area at an outer portion thereof than a base-interface of the medium with the first metallic member; and

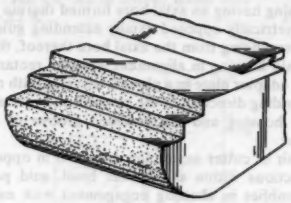
solid-phase bonding the first metallic member to the second metallic member, with the compliant metallic medium interposed therebetween and the second metallic member engaged with the small outer portion of the raised compliant crest region, by the application of at least a metal working force exerted on the preshaped compliant crest region of the medium through at least one of said first and second metallic members in the direction of the other member, the compliant crest region being slightly depressed and tangentially cold-flowed by the metal working force so as to effect mechanical cleaning of the second member-medium interface and to produce a reliable adhering bond at the second member-medium interface of enlarged cross-sectional area as compared to the initial surface area of the small outer portion of the raised compliant crest region.

3,939,560

SHAVING EQUIPMENT

Robert Lyall, Slough, England, assignor to Wilkinson Sword Ltd., England

Filed Jan. 30, 1974, Ser. No. 437,933
Claims priority, application United Kingdom, Jan. 31, 1973, 4870/73
Int. Cl.[2] B26B *19/42*
U.S. Cl. 30—34.2 14 Claims



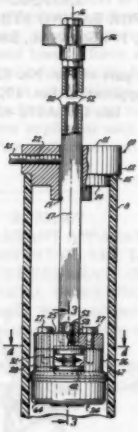
1. Shaving equipment having a longitudinally extending razor blade and a guard surface which bears against the skin of the user during shaving, wherein a part at least of said surface has a roughness of between 0.5 and 10.0 micrometers centre-line-average values.

3,939,561

PIPE CUTTING MECHANISM

Amon Nichols, 20802 N. 36th Ave., Glendale, Ariz. 85308

Filed June 21, 1974, Ser. No. 481,530
Int. Cl.[2] B23D *21/08*
U.S. Cl. 30—107 4 Claims



1. A mechanism for cutting pipe from the inside comprising:

a. a plate rotatably mountable on the end of the pipe, said plate having an axial bore and means for axially aligning the bore of said plate with the longitudinal axis of the pipe when said plate is mounted on the end thereof;

b. an elongated tubular arbor axially slidable within the bore of said plate and fixed for rotation with said plate;

c. means on said plate for locking said arbor against axial sliding movement relative to said plate;

d. a cutter head on one end of said arbor, said cutter head comprising, an adapter plate transversely affixed to one end of said arbor and having a recessed groove with closed ends formed in the surface thereof which faces away from said arbor and having a substantially rectangular slot extending from the recessed groove toward said

arbor, said adapter plate having an axial bore formed therethrough which communicates with the interior of said tubular arbor, and a housing demountably attached to said adapter plate, said housing having an open ended channel formed in the end thereof which faces said adapter plate and having a recessed groove with closed ends formed in the bottom of the channel thereof, the channel and the groove of said housing extending in the same direction as the groove of said adapter plate, said housing having an axial bore formed therein and a pair of diametrically opposed axially extending guide slots radially extending from the axial bore thereof, the guide slots of said housing in alignment with the rectangular slot of said adapter plate in a plane transverse with respect to the extending direction of the channel and recessed groove of said housing and the recessed groove of said adapter plate;

e. a pair of cutter assemblies mounted in oppositely facing directions within said cutter head, said pair of cutter assemblies in abutting engagement with each other for positioning thereof in a retracted position within the periphery of said cutter head, said pair of cutter assemblies radially movable in diametrically opposite directions to an extended position of protruding beyond the periphery of said cutter head; and

f. expander means within said cutter head and passing around said pair of cutter assemblies and extending from said cutter head through said arbor, said expander means axially movable to engage and radially move said pair of cutter assemblies from the retracted to the extended position thereof.

3,939,562

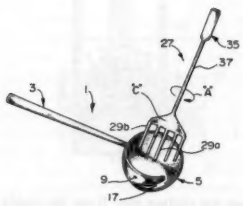
UTENSILS FOR EATING STRANDS OF FOODS

Emery A. Pellerin, 194 Smith St., Lasalle City, Quebec, Canada

Continuation-in-part of Ser. No. 521,841, Nov. 7, 1974, abandoned. This application Jan. 17, 1975, Ser. No. 541,789

Int. Cl.² A47J *43/28*

U.S. Cl. 30—147 **16 Claims**



1. A spoon-type utensil for use in eating strands of food, the utensil having a handle, a dished bowl attached to one end of the handle and an elongated tapering slot provided at least partly around the bowl of the utensil for cutting strands of food, the said slot opening on the side of the rim of the bowl and tapering down in the general direction of the handle, at least one of the edges of the said slot being a cutting edge, whereby the strands of food while penetrating into the tapering slot are gradually applied against the cutting edge to be cut.

3,939,563

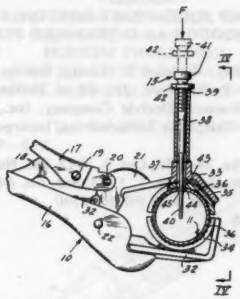
VISE AND PUNCH TOOL

Robert F. Deike, Cheyenne, Wyo., assignor to Foresight Industries, Cheyenne, Wyo.

Filed Feb. 3, 1975, Ser. No. 546,326

Int. Cl.² B26F *1/02*

U.S. Cl. 30—361 **5 Claims**



1. A vise and punch tool comprising a pair of hand grip levers, a pair of opposed jaw members controlled by said levers, an adjustable toggle linkage between one of the jaws and the hand grips locking the jaws around the work piece, said jaws having opposed enlarged sleeve portions for surrounding and gripping the work piece to prevent distortion thereof, one of said jaws having a tubular housing extending laterally therefrom, a prick punch slidably mounted in said housing adapted to penetrate a work piece surrounded by the jaw sleeves, and means limiting the penetration of the punch into the work piece.

3,939,564

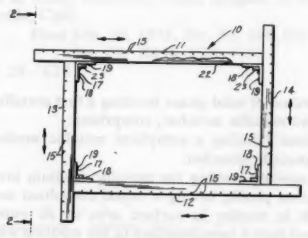
ADJUSTABLE GRID LINE DEVICE

Sr. Slawinski, 1537 Castle Hill Ave., Bronx, N.Y. 10462

Filed Feb. 20, 1975, Ser. No. 551,100

Int. Cl.² B43L *13/00*

U.S. Cl. 33—1 K **1 Claim**



1. An adjustable grid line device comprising: a frame including two pairs of parallel spaced apart bars, each having an L-shaped cross-section and each having a plurality of equally spaced apart notches along the edges thereof corresponding to the outer peripheral edge of the frame; means for adjustably connecting the bars for the expansion and contraction of the frame comprising L-shaped brackets each fixedly secured on one outside face to one of the bars and means securing each bracket on the other outside face to an adjacent bar comprising a bolt fastener, means defining an elongated slot in the adjacent bar freely and slideably receptive of the bolt, a winged nut fastener engaged with the bolt fastener and spring means cooperative with the bolt fastener for urging the bracket against the adjacent bar; thread means received in said notches on the oppositely opposed bars to form grid lines for the enlarging, reducing or copying of pictures; and a pair

of parallel spaced apart spring clips receptive of a canvas therebetween and fixedly secured to the inside corners of each bracket.

3,939,565

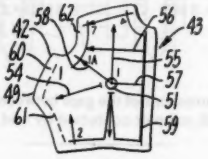
PATTERN FITTING TOOL AND METHOD OF CUSTOM FITTING PATTERS

Roberta F. Bush, 232 Sierra Drive, Walnut Creek, Calif. 94596

Division of Ser. No. 832,043, June 11, 1969, Pat. No. 3,883,955. This application Apr. 22, 1974, Ser. No. 462,756

Int. Cl.² A41H *3/04*

U.S. Cl. 33—17 R 2 Claims



1. A method of fitting patterns to a human figure, comprising:

a. attaching tapes to the figure being fitted at the waist and at the high around areas of the bust and seat,

b. marking the front, back and side seam locations on each of said tapes,

c. measuring front and back lengths between tapes and front and back widths between seam locations,

d. providing a plurality of transparent plastic sheet materials having basic clothing pattern sections imprinted thereon, said plastic pattern sections having:

i. indicia showing fixed reference points, some of which indicate the location of selected high round areas of the figure and other of which locate areas and serve as reference points for enlarging or reducing said plastic pattern sections in said areas, and

ii. correctable reference markings including seam lines and markings indicating areas for locating darts,

e. transferring the measured lengths and widths to the plastic pattern sections,

f. altering the plastic pattern sections in accordance with the measured lengths and widths from the figure,

g. joining plastic pattern sections together in a non-permanent manner to form a partial garment and placing it over the figure,

h. aligning said partial garment of plastic pattern sections to the figure by means of said some fixed reference points, enlarging or reducing said plastic pattern sections in said areas indicated by said other fixed reference points and further adjusting the plastic pattern sections relative to each other as required to determine proper dart and seam lines for an accurate fit of the figure, and

i. removing the plastic pattern sections from the figure, separating the sections and further marking the sections with the indicated dart and seam lines to produce a set of custom-tailored clothing patterns.

3,939,566

COPYING TRACER PARTICULARLY FOR STAMPING MACHINES

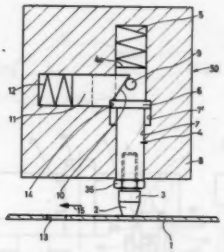
Erich Brekle, Benningen; Eugen Herb, Ditzingen, and Hans Klingel, Moglingen, all of Germany, assignors to Firma Trumph Maschinene AG, Switzerland

Filed Sept. 12, 1974, Ser. No. 505,249

Claims priority, application Germany, Sept. 15, 1973, 2346541

Int. Cl.² B23B *39/26;* B26D *5/02*

U.S. Cl. 33—23 K 11 Claims



1. A copying tracer for tracing templates having depressions, such as hollows, recesses, bores, etc., particularly for stamping or nibbling machines, comprising a housing having a bore therein, a copying tracer movable in the bore of said housing and having an outer template engaging end portion, and pressure means in said housing acting on said tracer to apply a biasing force against said tracer in a direction to urge the template engaging end into engagement with the template, said pressure means having a separate force applicator effective to apply an increased biasing force against said tracer after said tracer is displaced downwardly below the template by a predetermined amount when said tracer enters into the depression said tracer including means movable thereby to control said separate force applicator such that said separate force is applied only after said tracer moves said predetermined amount.

3,939,567

METHOD AND RELEVANT APPARATUS FOR THE INDIRECT MEASUREMENT OF THE LONGITUDINAL DEVELOPMENT OF CURVED SEATS OR GROOVES IN MECHANICAL WORKPIECES

Gastone Albertazzi, Bologna, Italy, assignor to Finike Italiana Marposs, Soc. In Accomandita Semplice di Mario Possati & C., Bentivoglio, Italy

Filed Aug. 28, 1974, Ser. No. 501,255

Claims priority, application Italy, Sept. 4, 1973, 3489/73

Int. Cl.² G01B *7/28*

U.S. Cl. 33—143 L 9 Claims

5. An apparatus for the measurement of the longitudinal development between the ends of a groove defined in a workpiece by two side surfaces having a part-circular profile of unknown bending radius, comprising:

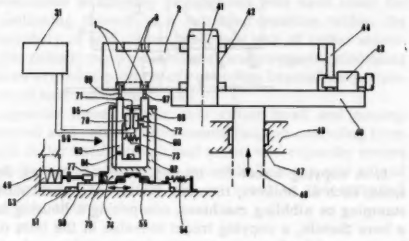
a frame;

a support, carried by the frame, for supporting the workpiece;

a first measuring device arranged at a side of the workpiece, said measuring device including: a first measuring element for contacting the workpiece at one end of the groove; a second measuring element for contacting the workpiece at the other end of the groove; and first position transducer means coupled to said elements for providing a signal responsive to the distance between the ends of the groove along the straight line passing through said ends;

a slide carried by the frame;

a second measuring device carried by said slide at a side of the workpiece, the second measuring device including: a first member comprised of two feelers stationary with respect to each other; a second member comprised of a third feeler movable in a transversal direction with respect to the line passing through said stationary feelers; an oscillating support, carried by said slide, for supporting said first member and second member and permitting said stationary and movable feelers to contact three relevant points on a side of said groove; and second position transducer means coupled to said movable and stationary



feelers to provide a signal responsive to the distance between the movable feeler and said line passing through the stationary feelers;

thrusting means coupled between said frame and the slide for displacing the slide to bring the stationary and movable feelers towards said side of the groove;

a retracting device coupled to said slide for displacing it to a rest position adapted for inserting the stationary and movable feelers into said groove; and

processing means for processing the signals provided by the first and second transducer means to obtain the longitudinal development of the groove.

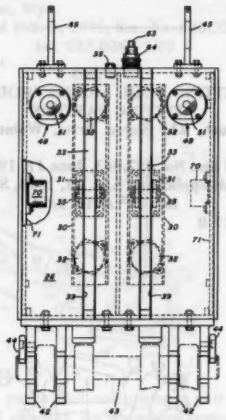
3,939,568

METHOD AND APPARATUS FOR LOCATING IMPROPERLY POSITIONED OR BENT ROLLS

Michael G. Gonos, Monroeville Borough; Kenneth D. Ives, Plum Borough, and Ronald S. Vranka, Monroeville Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 4, 1974, Ser. No. 503,147
Int. Cl.[2] G01B *5/00*
U.S. Cl. 33—143 L **27 Claims**

1. An apparatus for locating improperly positioned rolls among a set of rolls which are arranged in opposed pairs and have work-engaging faces defining a confined path of travel for a workpiece, said apparatus comprising a housing movable along said path, means carried by said housing at opposite faces thereof for abutting said work-engaging faces and guiding said housing, and a plurality of gap sensors carried by said housing and including heads supported for relative movement normal to the direction of movement of said housing along said path and adapted to contact the work-engaging faces of the individual roll-pairs successively at a plurality of locations along the length of the rolls, and transducer means operatively connected with said heads for transmitting signals representa-



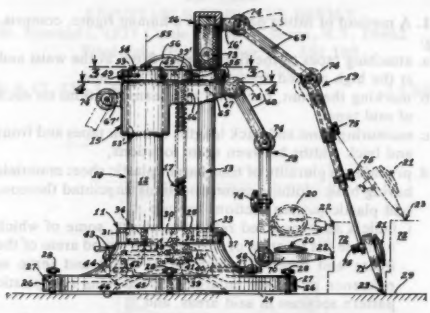
tive of the measurements of the gaps between the work-engaging faces of each roll-pair contacted by said heads.

3,939,569

INSPECTION TOOL OR DEVICE

Wayne H. Squires, 8005 N. 28th Ave., Phoenix, Ariz. 85021

Filed Oct. 15, 1974, Ser. No. 514,737
Int. Cl.[3] G01B *3/22, 5/00*
U.S. Cl. 33—174 L **4 Claims**



1. An inspection tool for positioning on a level surface and manually adjusted so that its base and associated movable and stationary components are in vertical and horizontal planes relative to the surface on which it is mounted so that the tool may be used for determining the relative squareness, angularity and other characteristics of the surface of an object being inspected comprising:

a base member,

a pair of cylindrical support posts mounted to extend laterally from said base member,

a stationary tie bar fixedly mounted on the upper ends of said support posts,

a first movable tramming head, means mounting said head for sliding and rotating movement on one of said pair of support posts, and said head having groove means for detechably engaging the other of said pair of support posts,

a second rotating tramming head being mounted on the other of said posts,

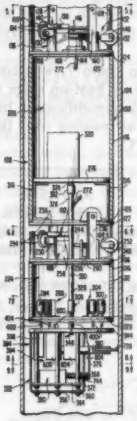
a hearing mounted in said tie bar,
a moveable head activating shaft mounted on said base and arranged to extend substantially parallel with said support posts with its free end rotatably mounted in said hearing,
said shaft being threadedly engageable with said first movable tramming head for causing movement of said first moveable head axially along said support posts,
said first tramming head having a second groove means for detachably engaging said shaft,
a pair of tramming arms one mounted on each of said first and second moveable tramming heads, and
a pair of dial indicators one mounted at the end of each of said tramming arms for indicating surface conditions over which they traverse.

3,939,570

APPARATUS FOR AND PROCESS OF DETERMINING OVERSTRESS IN PIPE PILES

William F. Loftus, 78a Ridge Road, Valley Cottage, N.Y. 10989

Filed June 20, 1974, Ser. No. 481,475
Int. Cl.² G01B *5/20, 5/12;* E21B *47/08*
U.S. Cl. 33—178 E **18 Claims**



1. An apparatus for determining the load-carrying capability of a hollow pile driven into the ground to carry a load whereby changes in the internal surface configuration of said pile at various point along its length are measured, comprising: a body member defining a longitudinal axis; rotatable sensing means, which is rotatable in relation to said body member about said axis, for entering and sensing the distance of a straight line extending from the longitudinal axis of said apparatus to the internal wall of said pile in any radial direction at any point along the length of said pile and for producing a signal representative of the distance of said line; means, independent of the longitudinal position of said apparatus in said pile, for rotating said rotatable sensing means to any desired radial position; and drive means for moving said body member longitudinally in said pile to any desired point along the length of said pile.

3,939,571

METHOD AND APPARATUS FOR AIMING AIRCRAFT VISUAL APPROACH SLOPE INDICATOR

James F. Studdard, Lake View Terrace, Calif., assignor to West Tech Systems, Inc., Los Angeles, Calif.

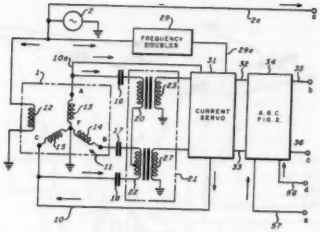
Filed June 26, 1974, Ser. No. 483,197
Int. Cl.² G01C *9/28*
U.S. Cl. 33—180 R **5 Claims**

1. A method for adjusting the vertical angle of an aircraft visual approach slope indicator, wherein the approach indicator includes a vertically adjustable housing containing at least one landing light mounted behind a horizontal crossbar across one housing wall to direct light through a horizontal aiming slit in the opposite housing wall at an adjustable vertical angle towards approaching aircraft, the cross bar being centrally aligned between said light and the slit and the angle of the directed light being determined by adjustment of the vertical angle of the slope indicator housing, comprising the steps of:
leveling a T-shaped calibration bar, having a T-leg and a cross arm, on an adjustable leveling system;
mounting the first linear bar of an alignment assembly on top of and parallel to the calibration bar T-leg, said alignment assembly further comprising: a second linear bar pivotally mounted at one end of the first bar in a vertical plane parallel to the vertical plane of the first bar, said second bar being directed rearwardly back towards the remote end of the first bar and carrying clamping means; a slotted angle plate secured to the first bar adjacent the free end of the second bar for engagement by said clamping means, said angle plate being marked so that the upper surface of the second bar is aligned with an indication of the vertical angle formed between the first and second bars when the second bar is horizontal; and an adjustable level mounted on the upper surface of the second bar;
rotating the second bar to a position parallel to the first bar so that the upper surface of the second bar is aligned with a zero angle indication on the angle plate;
adjusting the adjustable level until it indicates a horizontal position;
removing the alignment assembly from the calibration bar;
mounting the alignment assembly on the aircraft visual approach slope indicator by inserting said remote end of the first bar through the indicator housing slit and securing said remote end to said cross bar whereby said first bar assumes the vertical angle of the directed light;
rotating the second bar until its top surface is aligned with an angle plate indication corresponding to the desired angle of the directed light;
securing the second bar in its rotated position by engaging the clamping means with the slotted angle plate,
adjusting the vertical angle of the indicator housing until the level on the second bar indicates a horizontal position; and
removing the alignment assembly from the indicator housing.

3,939,572
LATITUDE COMPENSATOR FOR FLUX VALVE HEADING REPEATER SYSTEM

James R. Erspamer, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,760
Int. Cl.² G01C 17/30; G05B 11/06
U.S. Cl. 33—361 3 Claims

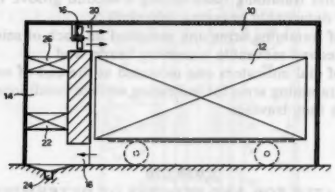


1. In a magnetic compass data transmission system for navigable craft, the combination comprising:
magnetic field detector means including a plurality of inductive windings responsive to the direction and magnitude of the earth's magnetic field with respect thereto for providing a first plurality of alternating signals representative of said earth's magnetic field direction and magnitude,
current servo means responsive to said first plurality of alternating signals for generating first and second unidirectional signals representative of said earth's magnetic field direction and magnitude,
gain control means responsive to said first and second unidirectional signals for generating third and fourth unidirectional signals representative of said earth's magnetic field direction and substantially independent of the magnitude thereof, said gain control means including:
first and second variable conductivity circuits having respective first and second conductivity states,
switching means for causing said first and second separate variable conductivity circuits simultaneously to change from one to the other of said first and second conductivity states at a controlled duty cycle,
filter means residing respectively in said first and second variable conductivity circuits for smoothing the respective currents flowing through said switching means for forming said third and fourth unidirectional signals,
circuit means for separately modulating said third and fourth unidirectional signals with a reference alternating signal for forming first and second output alternating signals representative of said earth's magnetic field direction,
control means responsive to said first and second output alternating signals for control of said gain control means, said control means including:
comparator means for comparing a signal representative of said first and second output alternating signals to a reference unidirectional signal, and
variable pulse-width generator means responsive to said comparator means for supplying controlled pulse-width modulated signals for controlling said controlled duty cycle, and
utilization means additionally responsive to said first and second output alternating signals.

3,939,573
PROCESS FOR DRYING WOOD

Furio Berti, Viale Thovez 40 int. 32, Turin, Italy

Filed Oct. 31, 1974, Ser. No. 519,712
Int. Cl.² F26B 3/00
U.S. Cl. 34—26 10 Claims



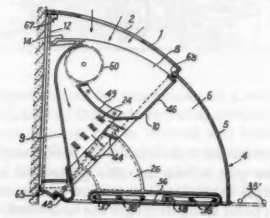
1. In a process for the forced drying of wood, wherein air is circulated around a closed circuit in which the air is heated, passed over the wood to be dried, de-humidified by cooling and then re-heated to commence another circuit, the improvement comprising the steps of:
a. a first stage of heating and maintaining the air passing over the wood at between 20°C and 30°C until the moisture content of the wood has fallen to between 16 and 25 percent by weight; and
b. a second stage of raising the temperature of the air passing over the wood to between 34°C and 38°C and maintaining the air passing over the wood at between 34°C and 38°C until the moisture level of the wood has fallen to a predetermined level at which drying is considered complete.

8. A process as in claim 7, wherein the first stage is preceded by a preliminary heat-up stage during which the air is not de-humidified, dehumidification being initiated when the temperature of the air passing over the wood has reached a value of at least 20°C.

3,939,574
LINEN DRIER

Claude Garot, Colombes, France, assignor to Societe Universelle de Fabrication d'Appareils Menagers S.U.F.A.M., Colombes, France

Filed Jan. 27, 1975, Ser. No. 544,556
Claims priority, application France, Jan. 29, 1974, 74.2832
Int. Cl.² F26B 9/00
U.S. Cl. 34—163 19 Claims



1. Linen drier adapted to be mounted on a wall, said drier comprising a box having one side adapted to lie against said wall and being equipped with means for producing a current of hot air, a visor mounted to pivot about an axis parallel to said one side between a retracted position adjacent the top of said box and an extended and lowered position in which it projects further away from said box, two supports mounted to pivot independently of said visor about an axis parallel to said one side between a retracted position lying mainly within said box and a lower position lying mainly outside said box, said

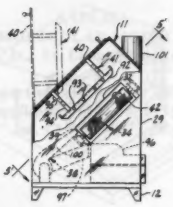
supports being positioned inside said visor and carrying a set of wires which are parallel to said one side of said box, said visor permitting access to said wires when said supports are in their extended position and said visor is in its retracted position and guiding said current of air toward said wires when both visor and supports are in their extended positions.

3,939,575

DRYER UNIT FOR PRINTING PLATES

Charles Wayne Schnelle, Aurora, Mo., assignor to Tasope' Limited, Aurora, Mo.

Filed Dec. 4, 1974, Ser. No. 529,375
Int. Cl.² F26B *19/00*
U.S. Cl. 34—216 4 Claims



1. A dryer unit for printing plates comprising:
a. a housing having opposed ends,
b. a belt conveyor assembly mounted to the housing and including a continuous movable belt having a perforate flat upper surface inclined in a direction transverse to the direction of motion, the belt carrying a printing plate flat on its upper surface at least part of the distance between opposed housing ends,
c. drying means mounted within the housing for circulating air above and below the perforate upper belt surface to dry both faces of the plate, the drying means including a blower having an elongate nozzle orifice disposed adjacent the lower side and substantially in the plane of the perforate flat upper surface of the belt, and disposed to blow heated air upwardly across the flat printing plate and both above and below the perforate flat upper belt surface, and
d. the housing including an outlet vent disposed above the nozzle orifice and adjacent the opposite upper side of the perforate flat upper belt surface.

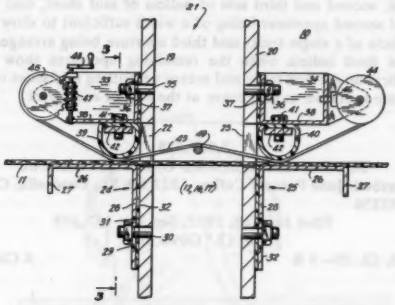
3,939,576

LOW FRICTION PRESSURE SEAL FOR FABRIC PROCESSING CHAMBER

Jackson Lawrence, West Sand Lake, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Filed July 19, 1974, Ser. No. 490,199
Int. Cl.² F26B *25/00*
U.S. Cl. 34—242 3 Claims

1. A low-friction, low pressure seal for use in combination with a processing chamber for the continuous liquid ammonia processing of fabrics, wherein the chamber is maintained at a slight negative pressure in relation to the surrounding ambient and wherein the fabric is conveyed through the chamber with minimum tension applied at the seal, wherein the seal comprises and is characterized by
a. means forming a smooth stationary rigid guide member mounted in the region of the chamber opening, for engaging, guiding and supporting one surface of the fabric web as it passes through the opening,
b. said guide member extending across the full width of the opening,
c. a stationary seal support mounted in spaced, parallel relation to said guide member and defining therewith a web passageway associated with said chamber opening,
d. an elongated, resilient, hollow, deformable sealing member carried by said stationary seal support and extending toward said guide member,
e. said deformable sealing member extending across the full width of said opening,
f. a thin, flexible, web-like section of low friction material secured in normally stationary manner in a region spaced from said deformable sealing member and extending between said sealing member and said rigid guide member,



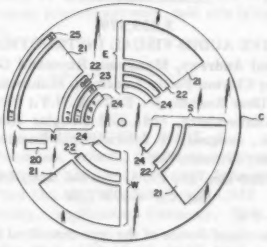
g. said web-like section being urged lightly toward said guide member by said sealing member,
h. said resilient sealing member being maintained free of internal inflation pressures, whereby sealing pressures applied by said sealing member are derived exclusively by limited elastic deformation of said sealing element, whereby said fabric can be advanced with a minimum of tension resulting from said seal, and
i. said low pressure seal being adapted for the low resistance passage of a fabric web between and in sealed relation with said guide member and said section of low friction material.

3,939,577

PRACTICE BOARD FOR CONTRACT BRIDGE GAMES

Kozo Amano, No. 480, Sasaya, Fuyacho-Takeyamachi Sagaru, Nakagyo, Kyoto, Kyoto, Japan

Continuation-in-part of Ser. No. 278,458, Aug. 7, 1972, Pat. No. 3,797,128. This application Feb. 20, 1974, Ser. No. 444,046. The portion of the term of this patent subsequent to Mar. 19, 1991, has been disclaimed.
Int. Cl.² G09B *19/22*
U.S. Cl. 35—8 B 3 Claims



1. A practice board for contract bridge, comprising a circular sheet having indicia marked thereon and arranged in accordance with a predetermined contract bridge game, said

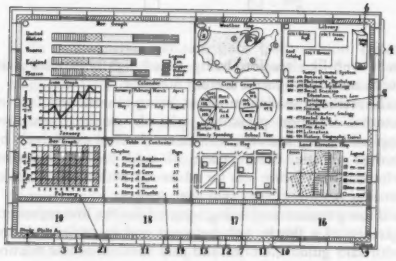
indicia including four sets of first indicia showing the cards of each player's hand and being arranged such that one of said cards for each of said player's hand is eliminated each trick, second indicia showing cards to be played by each player on respective tricks, said first and second indicia being arranged in rows, trick by trick, representing thirteen tricks, four sets of third indicia, each of said four sets of third indicia showing bids of the corresponding player at respective rounds of bidding in a row; a circular cover member overlying said sheet and being provided with apertures formed therein corresponding to said sets of indicia on said sheet and through which said indicia on each single trick can be seen, said apertures comprising first, second and third apertures corresponding to said first, second and third sets of indicia of said sheet, said first and second apertures being of a width sufficient to show the indicia of a single trick, said third aperture being arranged to said third indicia when the remaining apertures show the indicia on the first trick; and means permitting said sheet to be rotated relative to said cover at the end of each trick.

3,939,578

EDUCATIONAL BOARD GAME APPARATUS

Elizabeth Jane Putnam Coffey, 1322 6th St., Coachella, Calif. 92236

Filed June 20, 1973, Ser. No. 137,278
Int. Cl.² G09B 3/00
U.S. Cl. 35—9 R **4 Claims**



1. A game apparatus that embodies, in combination, a game board containing printed matter, pictures, maps, diagrams, and/or other subject matter designed to help players with responses, wherein some responses and/or methods of arriving at some responses are contained on said game board; cards that primarily contain any combinations of a question, questions, a command, commands, a symbol, symbols, a name, and/or names on one side of the card, with the matching and required answer, answers, statement, statements, word, words, name, and/or names on the reverse side of the same card, the questions, etc., and answers, etc., on said cards being at least in part related to the printed matter on said game board.

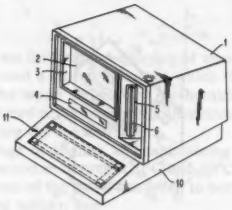
3,939,579

INTERACTIVE AUDIO-VISUAL INSTRUCTION DEVICE

Lawrence Paul Andrews, Manassas; Raymond Graham Fox, Warrenton; Clayton Potter Ludeman, Manassas, all of Va.; Thomas Wilbur Rounds, Jr., Endwell, N.Y.; Victor Anthony Scuderi, Gaithersburg, Md., and Douglas Howard Strait, Vienna, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,308
Int. Cl.² G09B 7/04
U.S. Cl. 35—9 A **2 Claims**

1. An audio-visual device of the type described having a film tape with projectable images thereon, projector devices, a film drive, and a counter selectively energizable by said film drive to maintain a count indicative of the film image at the projecting position of the projector device, an audio tape having a plurality of separate messages thereon in one or more channels, said tape also including at least one channel having indicia indicating the start of each message and a following block of device control information for each message, a read head for each channel of said audio tape, an audio tape drive and a second counter selectively energizable under control of said start of message indicia to maintain a count indicating the identification of the audio message present at the read head, a pair of settable indicators, one for each tape and each to indicate a desired tape position of the associated tape, two comparators, one for each tape, to compare the desired tape position for the corresponding tape with a present tape position, a drive controller for each tape, each drive controller energized by its related comparator to actuate its tape drive in a direction to move the associated tape toward the desired position, a control data storage device connected to said read



head for the control information channel to retain device control information as read from said audio tape, a plurality of user selectable response devices, means under control of said response devices to cause transfer of related device control information action from said information storage device to said settable indicators thereby causing movement of either or both of said tapes to response dependent positions and

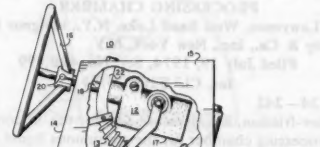
a character display service, a character storage means, character entry devices selectively operable by a user to enter character indicia into said character storage means for control of said display device, a start key and circuits controlled by said start key to successively compare character indicia stored in said storage means with character indicia in said device control information stored in said control data storage device.

3,939,580

DRIVER TRAINING AID

George S. Nakano, 6926 Ashland Drive, Boise, Idaho 83705, and Robert J. O'Mera, 965 Orlin Drive, Idaho Falls, Idaho 83401

Filed Jan. 27, 1975, Ser. No. 544,537
Int. Cl.² G09B 9/02
U.S. Cl. 35—11 **3 Claims**



1. A driver training aid, comprising:

a base having an upstanding housing;

a steering assembly comprising a worm gear shaft a steering wheel and a steering assembly having a sector shaft fastened to said steering wheel to provide substantially the same mechanical cooperation as is found in an actual steering wheel and steering gear, said steering assembly being mounted in said housing with the face of said steer-

ing wheel mounted at predetermined acute angle to the vertical; and

a variable resistance spring assembly comprising a spring arm fastened at one of its terminal ends to the worm gear shaft of said steering gear assembly, an arcuately shaped spring carring rod being substantially in a plane disposed perpendicularly to said worm gear shaft and fastened at its terminal ends to said housing with the geometrical center thereof being congruent with the center line of said worm gear shaft, and a spring being substantially coextensive with and being slidably carried on and having its ends secured to said spring carrying rod, the terminal end of said spring arm opposite the end connected to said worm gear shaft being fastened to the spring substantially midway of the length of said spring.

3,939,581

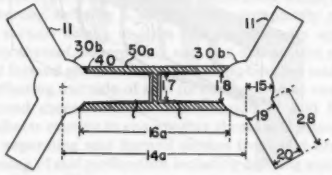
ORGANIC MOLECULAR MODEL ASSEMBLY

Frank H. Clarke, Jr., 14 Long Pond Road, Armonk, N.Y. 10504

Continuation-in-part of Ser. No. 369,097, June 11, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,103

Int. Cl.² G09B *23/26*

U.S. Cl. 35—18 A **9 Claims**



1. A color coded molecular model assembly kit for representing complex organic macromolecular structures and shapes, comprising two basic and complementary construction units capable of being interlocked, said first basic construction units being color coded tubes to represent at least the major part of the bonds of joined atoms or organic molecules consisting of three different lengths of said tubes; said lengths being such that when coupled to two of said second basic construction units the distances between the centers of the coupling means represent and are substantially proportional to 1.36 Angstroms, 1.54 Angstroms and 1.81 Angstroms respectively and said second basic construction units being color coded coupling means for said first construction units according to the valency of each said atom and centers of said coupling means representing atom centers, said coupling means having radial arms for precisely positioning said tubes, said radial arms being rods substantially located on the surface of a sphere with the center of the coupling unit being the center of the sphere, wherein said first and second construction units are made of plastic and are capable of being joined together and held immobile by friction by having said radial arms and/or the cavities of said tubes tapered so that a rigid bond is formed when said tube is pressed firmly onto the arm of said coupling means so that models of complex organic macromolecules may be constructed such that the distance between the centers of two coupling means represents and is substantially proportional to the distance between joined atoms, at least one type of said coupling means adapted for planartrigonal coupling of three said tubes separated by angles of about 120° and/or adapted for tetrahedral coupling of four said tubes separated by angles of about 109°.

3,939,582

SKI BOOT WITH FLEXIBLE INTERCONNECTED TOP AND BOTTOM PORTIONS

Carlo Garbuio, Volpago Del Montello, Treviso, Italy

Filed Aug. 22, 1974, Ser. No. 499,405

Claims priority, application Italy, Oct. 4, 1973, 29731/73

Int. Cl.² A43B *00/00*

U.S. Cl. 36—2.5 AL **5 Claims**

1. A ski boot comprising an integral body of polymeric sheet material including a bottom portion with a toe end and a heel end and further including a top portion connected with said bottom portion at said heel end by a pair of substantially inextensible lateral bridges and by a vertically extensible part flanked by said bridges, said top portion being provided with a pair of first lateral flaps extending forwardly from the region of said bridges, said bottom portion being provided with rearwardly extending second lateral flaps overlapped by said first flaps, said first and second flaps carrying mating fastener halves positioned on a horizontal axis in the region of the ankle upon mutual interengagement, said axis lying forwardly of said bridges.

3,939,583

ICE HOCKEY BOOT

Oskar Paul Daumann, Schney, Germany, assignor to LICO-Sportschuhfabriken Link & Co., GmbH, Schney, Germany

Filed Oct. 2, 1974, Ser. No. 511,319

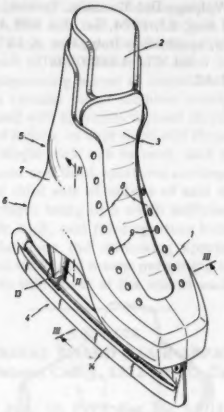
Claims priority, application Germany, Oct. 2, 1973, 7335607[U]

Int. Cl.² A43B *00/00*; A63C *1/02*

U.S. Cl. 36—2.5 R **12 Claims**

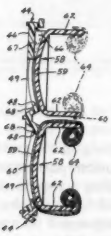
1. Ice hockey boot with a one piece outer shell of a relatively hard synthetic resin and an inner shoe of a relatively soft synthetic resin and with a blade support mounted to the sole

of the outer shell, characterized in that the outer shell is fashioned to be adapted to the shape of the foot in the joint zone,



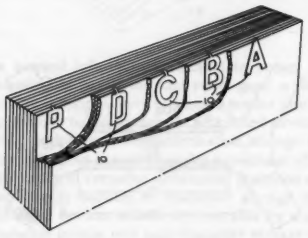
in the ankle zone, in the heel zone, and with respect to the constriction above the heel zone in the Achilles tendon zone.

3,939,584
DISPLAY WITH INTERLOCKING STRIPS
Charles E. Trame, Milwaukee, Wis., assignor to Everbrite Electric Signs, Inc., South Milwaukee, Wis.
Filed Oct. 29, 1974, Ser. No. 518,560
Int. Cl.² G09F 3/18
U.S. Cl. 40—10 R **7 Claims**



1. In a display an opaque generally planar holder of finite thickness adapted to be positioned in front of a source of light, said holder having a front and having at least one window opening, said window opening having a pair of oppositely-disposed lateral margins which are convexly curved toward the front of the holder, and each window having another pair of margins which extend generally transversely of said lateral margins, a tape support subjacent said window opening and at least co-extensive therewith and including a curved tape-supporting face of light-transmitting material matingly curved with respect to the convexly curved lateral margins of the window opening, and said tape support having oppositely-disposed guiding portions subjacent said transverse window margins, means mounting said tape support in position while leaving curved tape-guiding grooves between the curved face of the tape support and the convexly curved lateral window opening margins, and also providing tape-guiding slots between said oppositely-disposed guiding portions of said tape support and said transverse margins of said window opening through which tape is guided for movement, and a pre-curled tape having a display portion with light-transmitting indicia supported on said curved face of the tape support of said window opening, with the natural curvature of the tape maintained in a position to conform to the curvature of said curved face of said tape support and to the curvature of said lateral window opening margins, said tape having a curl at each end, the oppositely-disposed guiding portions of the tape support being each engaged with one of said end curls, said end tape curls being supported in spaced relationship so that the indicia on the curved face of the tape support is exposed to the source of light, the lateral margins of said tape being overlapped by said convexly curved lateral margins of said window opening whereby the tape is shiftable by a finger inserted through a window from the front of the display while the edges of the tape are inaccessible for grasping.

3,939,585
FILING SYSTEM
Evelyn G. Kahn, 165 Stanwich Road, Greenwich, Conn. 06830
Continuation of Ser. No. 317,052, Dec. 20, 1972, abandoned.
This application July 25, 1974, Ser. No. 491,685
Int. Cl.² G09F 3/16
U.S. Cl. 40—23 A **8 Claims**



1. A filing system comprising a plurality of combination indexing and fastening clips, each clip having a front indicium member and a rear opposing member attached to the front indicium member at the top thereof, the rear opposing member lying in substantially the same plane as the front indicium member and having a configuration surrounding and enclosing the sides and bottom of the front indicium member in non-intersecting relationship thereto, the front indicium member having a shape consisting of a particular reference character defined by the front indicium member of each clip in the set being readily distinguishable from the reference character defined by every other clip in the set, the rear opposing member having a torsionally resilient portion at the top thereof, said torsionally resilient portion being biased to hold the front indicium member and the rear opposing member in substantially the same plane and having two aligned bar-shaped elements each extending across a portion of the top of the front indicium member, the front indicium member being attached to the rear opposing member by two connecting arms each extending from the top of the reference character to one of said bar-shaped elements, whereby any separation of the planes of the front indicium member and the rear opposing member rotates the connecting arms and twists the torsionally resilient bar-shaped elements thereby giving rise to a resilient opposing force which tends to realign the front indicium member and the rear opposing member in substantially the same plane, and whereby when documentary materials are inserted between the front indicium member and the rear opposing member, the torsionally resilient portions of the rear opposing member bias the front indicium member and the rear opposing member toward substantially the same plane thereby securely binding the documentary materials therebetween.

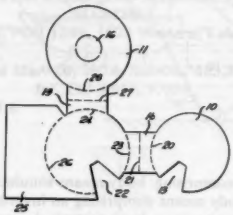
3,939,586
RELATIVELY MOVABLE BODIES AND METHODS OF MAKING THEM

Charles F. Clark, 99 Avondale Road, Yonkers, N.Y. 10710

Continuation of Ser. No. 150,538, June 7, 1971, Pat. No. 3,820,263, which is a continuation-in-part of Ser. No. 795,305, Jan. 30, 1969, Pat. No. 3,604,134. This application Nov. 12, 1973, Ser. No. 414,759. The portion of the term of this patent subsequent to Sept. 13, 1988, has been disclaimed.

Int. Cl.[2] G09F *11/04*

U.S. Cl. 40—70 R 7 Claims



1. The method of making a device having relatively movable parts, said method comprising: providing at least first and second sheets, forming at least one perforation within said first sheet thereby defining a substantially completely enclosed formed section having at least one discontinuity within the periphery thereof, superposing said first and second sheets so that said formed section in said first sheet overlies said second sheet, adhering one side of said formed section to one side of said second sheet, whereby manipulation of said first and second sheets relative to one another shears said discontinuity thereby separating said formed section from said first sheet, said forming of said perforation including defining said formed section so that said first sheet is capable of movement relative to said formed section fixed to said second sheet.

3,939,587
PAGE-TURNER FOR BOOKS AND THE LIKE

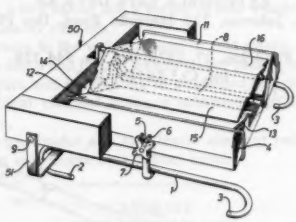
Jan Hakan Weststrom, P-antskogsvagen 5, 140 22 Upplands Balinge, Sweden

Filed Feb. 4, 1974, Ser. No. 439,280

Claims priority, application Sweden, Feb. 8, 1973, 73017055

Int. Cl.[2] G09F *11/00*

U.S. Cl. 40—104 A 12 Claims



1. A page-turner for turning the pages of an open publication having a spine and front and back covers, the page-turner comprising:

a frame;

a support for supporting an open publication;

first means for carrying said support on said frame;

second means for clamping the covers of such open publication on said support;

a rotatable page-turning roller having an axis extending in a first direction substantially parallel to the spine of such publication when the publication is supported by said support;

third means coupled to said frame for carrying said page-turning roller over said support and for selectively displacing said page-turning roller from one side of the support to the other in a second direction substantially perpendicular to said first direction;

fourth means for selectively rotating said page-turning roller in a desired direction of the two possible rotational directions;

fifth means for bringing said page-turning roller into contact with the pages of such open publication;

sixth means for pressing down the pages of such open publication not being turned, said sixth means including two page-retainers arranged in conjunction with the page-turning roller; and

seventh means for operating said third, fourth and fifth means to sequentially bring said page-turning into engagement with a page to be turned, selectively rotate said page-turning roller so that at least said page to be turned is brought up on the page-turning roller, and displace said page-turning roller to the opposite side of the open publication, whereby said page is turned.

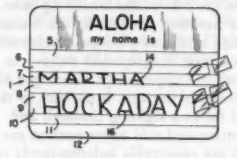
3,939,588
LETTERING GUIDE APPARATUS

Robert C. Hockaday, 1053 Koohoo Place, Kailua, Hawaii 96734

Filed June 24, 1974, Ser. No. 482,656

Int. Cl.[2] B43L *13/00;* G09F *7/00*

U.S. Cl. 40—125 A 6 Claims



1. Lettering apparatus comprising a flat card stock lettering plate having a series of parallel individually peelable disposable strips mounted on the plate, and a releasable bonding means connected to the strips on sides thereof adjacent the plate for holding the strips on the plate and for permitting selected strips to be pulled from the plate and for leaving remaining strips on the plate, and surface discontinuities formed between the plate and strips remaining on the plate, whereby the surface discontinuities form guides for lettering on the plate, wherein a first space on a front face of the plate is devoid of the peelable, disposable strips and wherein the peelable, disposable strips are mounted adjacent each other on a second portion of the front face of the plate.

3,939,589
FIREARMS WITH FORESTOCK

Paul E. Tellie, 20, rue Bergson-42000, St. Etienne, France

Filed May 17, 1974, Ser. No. 470,840

Claims priority, application France, June 1, 1973, 73.1995

Int. Cl.[2] F41C *23/00;* F41G *1/46*

U.S. Cl. 42—71 R 8 Claims

1. A firearm comprising:

a breech housing,

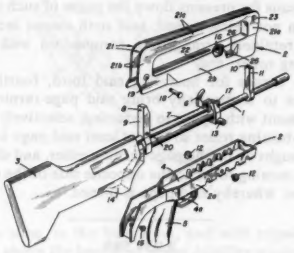
a launching tube,

a forestock, said forestock surrounding the rear portion of said launching tube, said forestock comprising:

a lower housing portion for supporting firing mechanisms, said housing portion being fastened by removable fastening means to the launching tube and to the breech housing,

an upper hood portion for protecting mechanisms in the upper region of the firearm, said hood portion being fastened by removable fastening means to said launching tube, said hood portion comprising:

a longitudinal base in the form of an inverted channel adapted to come over the upper portion of the firearm near the rear region of the launching tube,



two hoops forming a carrying handle permitting a marksman to carry the firearm, said hoops extending above said base and the two hoops each comprising a front upright and a rear upright connected together by a flat upper strip which is directed vertically and extends parallel to the axis of the launching tube, and

a transverse partition connecting the lower edges of the upper strips of the two hoops at least over the major portion of their length, said transverse partition together with the upper strips defining a channel which is open towards the top, is parallel to the axis of the tube, and forms a sighting channel, and

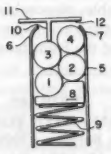
said upper portion and said lower portion are two separate parts which are removable independently of each other.

3,939,590

MAGAZINE EMPTYING DEVICE

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Filed Sept. 11, 1974, Ser. No. 504,901
Int. Cl.² F41C 27/00
U.S. Cl. 42—90 **8 Claims**



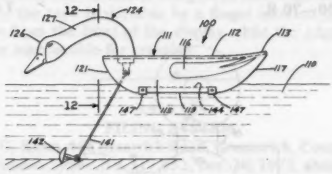
1. A magazine emptying device comprising: mounting means having a stud fixed integrally thereto, said stud being inserted into a feed mouth of a magazine and positionally adapted for exerting thrust against a cartridge in said magazine adjacent to the cartridge nearest said feed mouth; and means to limit insertion of said stud into said feed mouth.

3,939,591

DECOY

George H. Schwartztrauber, 925 N. Ninth, West Des Moines, Iowa 50265

Continuation-in-part of Ser. No. 414,918, Nov. 12, 1973, abandoned. This application Dec. 26, 1974, Ser. No. 536,545
Int. Cl.² A01M 31/06
U.S. Cl. 43—3 **26 Claims**



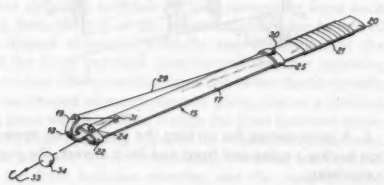
1. A decoy comprising: body means simulating the body of a fowl, said body means comprising an inverted generally U-shaped member having a back section, downwardly directed sides joined to the back section, and a longitudinal passage through said member with open forward and rear ends whereby fluids can flow through said body means to orient the body means with the direction of the flow on the fluids, head means simulating the head of a fowl releasably connected to said member, and coacting means on said member and head means to releasably attach the head means to the member, said coacting means including first means on said head means to permit rotation of the head means about an upright axis, and second means on the member accommodating the first means to hold the head means in assembled relation with the member and permit said rotation of the head means, said second means including an opening in the back section, said first means including projection means on said head means extended through said opening, and means cooperating with the projection means and back section to hole the bottom surface of the head means in firm surface engagement with the back section, said means cooperating with the projection means and back section including a plurality of leg members mounted on the projecton means and engageable with the back section, said leg members having inwardly directed feet engageable with the back section, said projection means having recesses to accommodate the feet whereby the projection means and leg members can be inserted through said opening in the back section.

3,939,592

EXTENSIBLE TAPE DEVICES

Richard D. Johnson, 715 Marcella Road, Des Plaines, Ill. 60016

Filed Jan. 27, 1975, Ser. No. 544,328
Int. Cl.² A01K 97/00
U.S. Cl. 43—15 **14 Claims**



1. An extensible rollup device, comprising:

an elongated resiliently flexible tape body having a normal rollup bias, and a transversely arching bias for retaining

the body selectively extended in opposition to said rollup bias;

rollup of the extended body being triggered by relatively flattening a terminal portion thereof to overcome the arching bias; and

a utility element carried on said terminal portion, in noninterfering relation to functioning of said rollup bias or said arching bias, and adapted to be rolled up within the tape.

3,939,593

FISH HOOK AND ASSEMBLY SNAPPER MASTER OR IMPROVED FISH HOOK AND ASSEMBLY (SNAPPER MASTER)

Hudson C. East, POB 1299, 1924 Western, Lake Charles, La. 70601

Filed Mar. 22, 1974, Ser. No. 453,815
Int. Cl.² A01K 97/04
U.S. Cl. 43—41.2 **1 Claim**

1. An improved fish hook and assembly comprising

a line for connection to a fishing reel and line,

a leader element forming a line having a loop for connection and being secured to the end of the line at one of its ends and having a hook at its other end and having a sink weight (leader) connected at an intermediate point of the leader element,

a weight leader having a loop end means disposed on said leader element between its loop and its weight identity element, said loop end means so sized to stop at the weight identity element,

a sleeve of essentially plastic metal material having a weight element at one end,

a slot extending along the exterior surface of said sleeve and sufficiently large to receive the ingress and egress of said hook when baited and a length of said weight leader and said leader element,

an aperture in the weighted end of said sleeve,

and the distal end of said weight leader passing through said aperture and terminating in a crimped sleeve,

said weight element filling a substantial portion of said sleeve,

said weight leader and said leader element being retained within said sleeve by a rubber band.

3,939,594

FISH LINE HOLDER

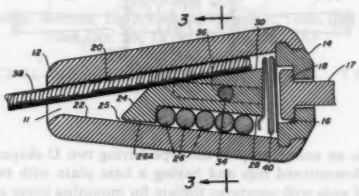
Lawrence R. Wagner, 7843 E. 49th St., Tulsa, Okla. 74145

Filed Aug. 12, 1974, Ser. No. 496,383
Int. Cl.² A01K 85/00
U.S. Cl. 43—42.49 **18 Claims**

1. A quick grasp and release line holder comprising:

a housing having an integral cavity, the cavity being defined by a rectangular cross section formed of first and second parallel side walls and a top and bottom which are tapered towards each other with a selected angle therebetween, the small end of said cavity opening to the oustide of said housing, the housing having a slot opening therein parallel the cavity bottom surface, the opening intersecting one of said side walls;

a tapered wedge inside said cavity, said wedge having parallel side surfaces spaced apart by a dimension less than the spacing between said first and second side walls of said cavity, and tapered top and bottom edges, the angle of taper of the edges being the same as the angle of taper of said top and bottom cavity walls;



spring means urging said wedge toward the small end of said cavity; and

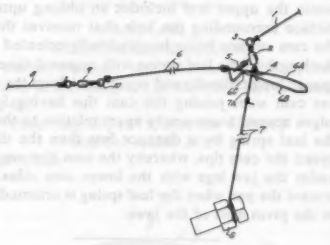
a member connected to one side of said wedge extending through said housing side opening to retract said wedge against the force of said spring toward the large end of said cavity to permit the insertion of a line through the open end of said housing and between said cavity top surface and said wedge top edge.

3,939,595

SINKER RELEASE MEANS

Neal R. Lockett, 3701 SW. 105th, Seattle, Wash. 98146

Filed May 7, 1975, Ser. No. 571,713
Int. Cl.² A01K 91/00
U.S. Cl. 43—43.12 **10 Claims**



1. Sinker release means for fishing gear, said means including,

an attachment for securement to a fishing line, said attachment including first and second eyelets,

a flexible wire member interconnecting said line attachment with a length of leader ahead of a lure, said wire member of elongate loop configuration adjacent its forward end and thereat engaged with said eyelets and adapted to detachably support sinker attachment means, and

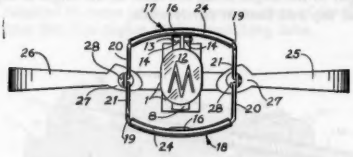
said first and second eyelets normally confining said sinker attachment means on said wire member, said wire member displaceable rearwardly relative to said eyelets upon a fish striking the lure whereby said sinker attachment means is released from said wire member.

3,939,596

ANIMAL TRAP

Lawrence E. Webley, P.O. Box 91, Wilson Creek, Wash. 98860

Filed Jan. 3, 1975, Ser. No. 538,352
Int. Cl.² A01M 23/26
U.S. Cl. 43—90 3 Claims



1. In an animal trap of the type having two U-shaped jaws with downturned legs and having a base plate with two upturned ends with apertures therein for mounting lower ends of the downturned legs for pivotal movement about parallel horizontal axes between horizontal coplanar open set positions and vertical abutting closed positions, an improvement comprising:

a pan mount secured to the base plate:

a pan pivotably mounted to the pan mount about an axis parallel to the axes of said jaws;

a protruding rib on one of the jaws, said rib extending inwardly toward the remaining jaw when the jaws are in their open positions;

trigger notch means formed on the pan protruding outward toward said one jaw for engagement with the rib when the jaws are in an open set condition with said one jaw located alongside said pan for holding the jaws in their open positions until a downward force is applied against the pan;

spring means for urging the jaws toward a closed condition comprising a V-shaped leaf spring having top and bottom leaves with holes at opposite spring ends to receive one upturned end of the base plate and the jaw legs pivoted thereto;

wherein the upper leaf includes an oblong upturned cam surface surrounding the hole that receives the jaw legs, the cam surface being longitudinally oriented parallel to the length of the leaf spring with opposed raised cam tips spaced longitudinally and equidistant from the hole; and

lower cam sides joining the cam tips having longitudinal edges spaced transversely apart relative to the length of the leaf spring by a distance less than the distance between the cam tips, whereby the cam tips are positioned under the jaw legs with the lower cam sides projecting toward the pan when the leaf spring is oriented transverse to the pivot axes of the jaws.

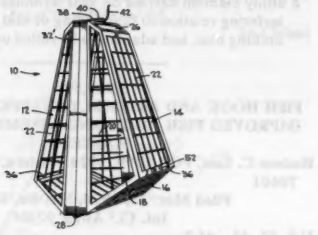
3,939,597

CRAB OR FISH TRAP

Thomas McSherry, Bayport, N.Y., assignor to Woodstream Corporation, Lititz, Pa.

Filed Dec. 11, 1974, Ser. No. 531,776
Int. Cl.² A01K 69/10
U.S. Cl. 43—105 6 Claims

1. A crab or fish trap comprising a pair of compartment half members, each said member comprising a mesh structure generally defining a truncated oblique rectangular pyramid having a trapezoidal base, two opposed trapezoidal end faces, a trapezoidal rear face, an open trapezoidal front face, and a frustum defining a trapezoidal top face, said front and rear faces being substantially larger than said base; hinge means joining said members at the edge joining said base and said front face such that when said trap is in a closed position the respective front faces are juxtaposed in a mating relationship to thereby form an enclosed compartment, and when said trap is in an open position said bases of said compartment half members form a substantially planar trap base and said front



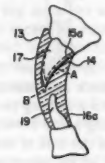
faces are spaced apart to allow ingress of a crab or fish; and means for moving said members to the opened or closed positions.

3,939,598

ORTHODONTIC POSITIONER WITH OVERBITE OR OPEN BITE CORRECTING OR RELAPSE INHIBITING CAPABILITY

Earl O. Bergersen, 950 Linden Ave., Winnetka, Ill. 60093

Filed Jan. 23, 1975, Ser. No. 543,356
Int. Cl.² A61C 7/00
U.S. Cl. 32—14 B 14 Claims



1. An orthodontic tooth positioning appliance which is generally U-shaped in plan view and which includes at least one tooth receiving trough of a size and shape for positioning at least one row of a patient's upper and lower row of teeth, said trough being defined by lingual and labial-buccal flanges and including an isthmus interconnecting said flanges,

the thickness of the isthmus being such that as the side thereof opposite the trough rests against the occlusal surfaces of the row other than said one row, the anterior teeth of said one row engage the isthmus before the posterior teeth of said one row to exert a force against the anterior teeth depressing them into the gum to correct for overbite or to retain a previous overbite correction as the posterior teeth complete their movement towards engagement with the isthmus.

3,939,599

POLISHING DEVICE

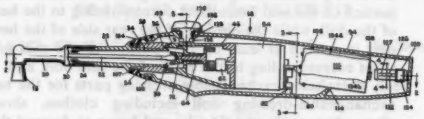
Ormond L. Henry, Muskegon, and Raymond P. Smith, Southfield, both of Mich., assignors to D & H Industries, Inc., Oxen Hill, Md.

Filed July 12, 1973, Ser. No. 378,773
Int. Cl.² A61C 3/06
U.S. Cl. 32—59 14 Claims

1. In a tooth polishing device wherein a polishing tool is secured to a power drive means and said power drive means is pivotably mounted in a casing for movement between first and second positions within said casing; and power supply means, including a switch, are coupled to said power drive

means for supplying electrical power thereto; the improvement which comprises:

said switch means includes a leaf spring made of a resilient electrically conductive material, said leaf spring mounted at one end to said power drive means and having a free



end bearing against said casing, said leaf spring being positioned on said power drive means to bias said power drive means to said first position, said switch means being open when said power drive means is in said first position and being closed when said power drive means is moved to said second position.

3,939,600

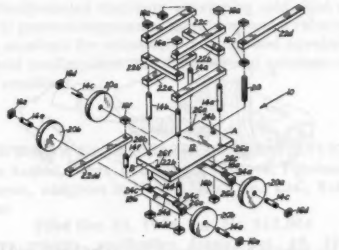
TAKE-APART TOY

Ellen G. Eid, 15666 SE. Johnson Road, Clackamas, Oreg. 97015

Filed Oct. 30, 1974, Ser. No. 519,258

Int. Cl.² A63H *33/06*

U.S. Cl. 46—17 **4 Claims**



1. A take-apart toy whose parts may be assembled to resemble one or more particular devices, comprising:

a. a rectangular base having a pair of threaded circular side apertures extending through said base along each side thereof and a circular aperture extending through said base adjacent each end thereof, one said end aperture having interior threads;

b. a plurality of round bolts, each of a sufficiently small diameter for insertion into at least one said circular apertures in said rectangular base, said bolts having two separate sets of threads each disposed at the respective ends thereof and a smooth surface portion disposed therebetween, the outside diameter of the threaded portions of said bolts being substantially equal to the diameter of the smooth portion and the threads of said bolts being matingly matched to the threads of said threaded apertures in said rectangular base, the end aperture in said base opposite said threaded end aperture being of sufficient size for slidably accepting one of said bolts;

c. a plurality of nuts having interior threads for mating with the threads of said bolts;

d. a plurality of wheels each having a circular aperture of a diameter larger than the diameter of said bolts formed at its center for rotatably mounting said wheels on said bolts; and

e. multiple elongate axle members for attachment to said rectangular base to support said wheels, each said axle member having threaded apertures formed longitudinally at each end thereof for mating with the threads of one of said bolts and multiple longitudinally spaced apertures extending transversely through said elongate member each of a diameter larger than that of said bolts for slidably accepting said bolts, the longitudinal spacing between said transverse apertures in said axle members being equal to the side-to-side spacing between said two pairs of side apertures in said rectangular base to permit said respective apertures to align with one another.

3,939,601

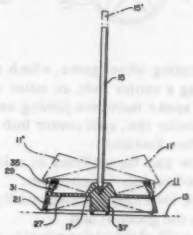
SPINNING TOY

Samuel H. Kernell, 1052 Railton, Memphis, Tenn. 38111

Filed Oct. 26, 1972, Ser. No. 301,083

Int. Cl.² A63H *1/32*

U.S. Cl. 46—47 **7 Claims**



1. A spinning toy for spinning on a planar surface and for actuation by an elongated rod having a sharp pointed end, said toy comprising a disklike body having a circular rim for engaging the planar surface, said rim being disposed on the bottom of said body and defining the perimeter thereof, and an upwardly directed concentrically disposed protuberance having an upwardly opening conical shaped socket provided therein for guidingly receiving the sharp pointed end of said rod to cause an acceleration of a wobble spinning movement of said toy by an intermittent downwardly directed force being applied along the longitudinal axis of said rod.

3,939,602

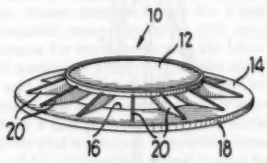
CIRCULAR AIR GLIDER

Harry E. Burke, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed May 27, 1975, Ser. No. 580,663

Int. Cl.² A63H *27/00*

U.S. Cl. 46—74 D **8 Claims**



1. An aerodynamic toy, comprising:

a generally circular upper disc portion;

a lower annular ring portion concentric with said upper disc portion, with a central aperture therethrough; and

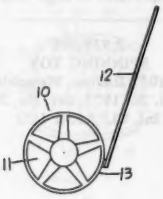
angularly spaced support means connecting said upper disc portion and said lower ring portion in a parallel, spaced relation providing air passage means through said aperture and the spaced support means and between the upper disc portion and lower annular ring portion, and whereby precession of the toy through the air will impart lift to the toy.

3,939,603

TRUNDLE AND WHEEL WITH SOUNDING MEANS

Emmett Skinner, Sunrise, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Nov. 4, 1974, Ser. No. 520,250
Int. Cl.² A63B 71/00
U.S. Cl. 46—114 2 Claims



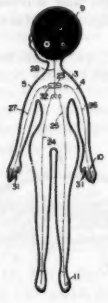
1. A noise generating wheel game, which comprises:
a. a wheel having a center hub, an outer circular rim, and a plurality of spoke members joining said center hub to said outer circular rim, said center hub having a hollow interior chamber therein;
b. a lateral screw cap face affixed to said center hub for closing said hollow interior chamber;
c. a control stick for engaging tangentially said rim to roll said wheel on the ground; and
d. a plurality of solid elements removably contained in said hollow interior chamber, said solid elements striking the walls of said interior chamber within said center hub to generate said noise as said wheel rolls on said ground.

3,939,604

EXCHANGEABLE-DRESSING DOLL

Shinhachiro Nishizawa, 1-279, Okuyama, Ashiya, Hyogo, Japan

Filed Nov. 4, 1974, Ser. No. 520,657
Claims priority, application Japan, Aug. 20, 1974, 49-99787[U]; Aug. 23, 1974, 49-101669[U]; Aug. 20, 1974, 49-95651; Aug. 23, 1974, 49-97324
Int. Cl.² A63H 03/04
U.S. Cl. 46—151 8 Claims



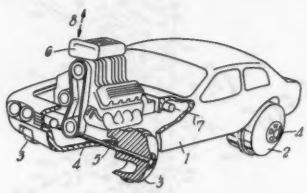
1. An exchangeable-dressing doll comprising:
a body of the said exchangeable-dressing doll characterized in that a front sheet of flexible thermoplastic synthetic resin having a contour simulated to the front contour of the whole human body and a rear sheet of the same quality as the said front sheet having a contour symmetric thereto are welded together along the whole contour line, a flexible foam sheet of thermoplastic synthetic resin packed in and between the said two sheets, the peripheral portions of the foam sheet adjacent to the weld forming a weld layer together with the whole peripheral portions of the contours of the said front and rear sheets and with the inner peripheral portions adjacent thereto, wires free to flex being inserted in and between at least those portions of the said two sheets which correspond to the limbs of the said doll, and that the pattern of the front side of the head part including the face is printed at least on that portion of the said front sheet corresponding to the head of the doll, while the pattern of the rear side of the head part is printed at least on that portion of the said rear sheet corresponding to the head of the said doll, and
freely detachable exchangeable-dressing parts for the said exchangeable-dressing doll including clothes, shoes, gloves, hats, wigs and the like and being so formed that front and rear flexible sheets with colors, designs, etc. dyed or printed on their external surfaces are integrally stuck at contour portions except opening portions for the dress exchanging.

3,939,605

CONTROL OF ACCESSORIES FOR TOY OR MODEL VEHICLES

John Allen, 15 Ridge Road, Winchmore Hill, London, N21 3EB, England

Filed Mar. 13, 1973, Ser. No. 340,839
Claims priority, application United Kingdom, Mar. 15, 1972, 12174/72
Int. Cl.² A63H 11/10
U.S. Cl. 46—204 1 Claim



1. A toy vehicle having wheels and axles freely and independently rotatable in either direction; an eccentric pin formed integrally with at least one of said wheels; a member on said vehicle and movable relative to the rest of the vehicle, said pin transmitting motion to said member, said member comprising a simulated engine moulding pivotably secured to the body of the toy and engaged by said pin, said pin rocking the engine during movement of the toy.

3,939,606

MULCH AND METHODS OF MANUFACTURING AND UTILIZING THE SAME

Joseph S. Vandemark, Urbana, Ill., and Robert T. Seith, Tuscaloosa, Ala., assignors to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed May 17, 1974, Ser. No. 470,910
Int. Cl.² A01G 7/00
U.S. Cl. 47—9 5 Claims

1. An improved mulch comprising a sheet of paper substantially completely covered at one side thereof with a water-

impervious material and coated at the opposite side thereof, only at marginal regions including planar side surfaces along opposite edges of the sheet, with a water-insoluble fungicide.

3,939,607

INFLATABLE TERRARIUM ASSEMBLY

Donald Spector, 380 Mountain Road, Union City, N.J. 07087

Filed Dec. 17, 1974, Ser. No. 533,518
Int. Cl.² A01G 9/02
U.S. Cl. 47—34 T **5 Claims**

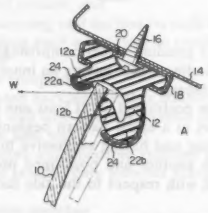
1. A inflatable and deflatable collapsible closed terrarium assembly which can be inflated to assume a desired configuration for housing a potted plant or other watered article to be protectively enclosed, said assembly comprising a disc-like base and a dome attachable thereto, said dome being formed of a flexible, non-selfsupporting clear plastic film envelope having an open mouth, a coupling ring secured to the mouth of the envelope and sealably joinable to the base to form a hermetically-sealed enclosure enveloping said plant or other article to prevent evaporation therefrom, and a valve mounted on the envelope for selectively inflating said envelope to assume said configuration and deflating said envelope to a collapsed condition.

3,939,608

WINDOW PANE WEATHER STRIP FIXTURE

Masaru Asakai, Tokyo, and Hiroshi Inamoto, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 15, 1974, Ser. No. 515,064
Claims priority, application Japan, Oct. 19, 1973, 48-122289[U]
Int. Cl.² E06B 7/16
U.S. Cl. 49—488 **7 Claims**



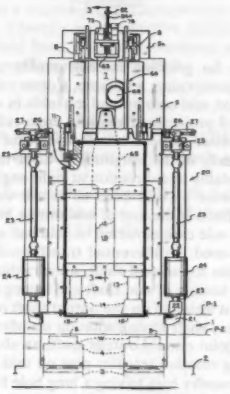
1. A window pane fixing and sealing device for an automotive door window pane having a lowered, window open position and a raised, window closing position, comprising a weatherstrip with an outboard lip and an inboard lip contiguous to one another, said inboard lip having a bulbous bottom portion and an upwardly directed end portion; a clip surrounding substantially the whole contour of the weatherstrip, said clip having a first leg extending around the outboard lip and bearing on the upper edge of the window pane in its window closing position to hold the window pane preventing it from shifting outboard, and a second leg extending around the inboard lip excluding the end portion, wherein said inboard lip and said second leg of the clip are so located and configured that the upper edge of the window pane is guided successively along said second leg portion engaging the bulbous bottom portion and along said end portion of the inboard lip and is then correctly located between the inboard and outboard lips while moving from the window open position to the window closing position; and a retaining means for fixing the weatherstrip to an upper edge portion of a door opening of an automotive body and surrounding a part of said clip.

3,939,609

GRINDING MACHINE CONSTRUCTION

Anthony Wasco, Jr., Saginaw, Mich., assignor to The Wickes Corporation, San Diego, Calif.

Filed Apr. 4, 1974, Ser. No. 457,774
Int. Cl.² B24B 49/18
U.S. Cl. 51—5 D **19 Claims**

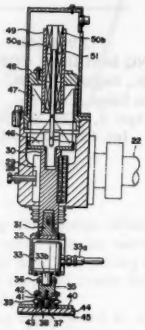


11. A grinding machine construction comprising frame means; workpiece supporting means carried by said frame means; slide means; support means for a tool composed of erodable material; means mounting said support means on said slide means for movements with the latter in a direction toward said workpiece supporting means and for movements relative to said slide means in said direction; means mounting said slide means on said frame means for movement in said direction from a first position in which a surface of said tool is spaced from said workpiece supporting means to a second position in which said surface is less spaced from said workpiece supporting means and is located a predetermined distance from a workpiece supported by said workpiece supporting means; drive means; drive transmitting means coupling said drive means and said slide means for moving the latter between said positions; operating means for moving said tool support means relative to said slide means toward said workpiece support means; and means for operating said operating means to vary the location of said tool support means by an amount such that said predetermined distance is substantially constant regardless of erosion of the surface of such grinding wheel.

3,939,610
DEVICE AND METHOD OF GRINDING METALLIC MOLDS AND PRODUCTS AUTOMATICALLY

Junichi Suzuki, Yamato; Toru Matsuda, Sagamihara, and Takahiro Katsube, Yokohama, all of Japan, assignors to Shatai Kogiyo Co. Ltd., Japan

Filed July 30, 1973, Ser. No. 383,491
Int. Cl.² B24B *49/08, 49/10*
U.S. Cl. 51—56 R **2 Claims**



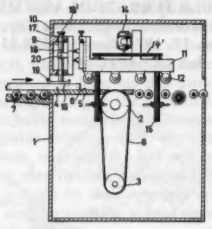
1. A device for grinding metallic molds and workpieces automatically comprising, a column, a cross rail support movably mounted on said column and movable in a vertical direction, a cross rail projecting from said cross rail support in the horizontal direction, a head mounted on said cross rail movable automatically in the longitudinal direction of said cross rail, an arm slidable in a direction at right angles to said cross rail and supported by said head so that it can be freely inclined, a case fixed at the end of said arm, a ball spline in said case, a shaft in said case mounted on said ball spline and freely raised and lowered, a differential transformer having a core connected to the top of said shaft, a hydraulic motor directly coupled to the bottom of said shaft and having an output shaft, a universal joint installed on the output shaft of said hydraulic motor, a delivery shaft having rotation transfer bars mounting said universal joint on said output shaft, an abrasives supporting unit having rotation transfer pins on said universal joint, said rotation transfer bars having a long hole for inserting said rotation transfer pin loosely therein, an elastic member on said abrasives supporting unit, abrasives fixed to said elastic member, a load setting means for setting a specific grinding pressure applied to said abrasives, a servo mechanism movable vertically in accordance with voltage difference resulting from a difference between the actual grinding pressure detected by said differential transformer during grinding operation and the set grinding pressure, and a servo cylinder having a piston rod on said head for inclining said arm.

3,939,611
WORKPIECE FEEDING APPARATUS, ESPECIALLY FOR MACHINING EQUIPMENT

Dietrich Hesler, Frickenhausen; Gerhard Gresser, Oberboihingen, and Helmut Brandstetter, Nuertingen, all of Germany, assignors to Karl M. Reich Maschinenfabrik GmbH, Nuertingen, Germany

Filed Mar. 11, 1974, Ser. No. 450,228
Claims priority, application Germany, Mar. 28, 1973, 2315389
Int. Cl.² B24B *21/06*
U.S. Cl. 51—139 **14 Claims**

1. An apparatus for feeding a workpiece through a machine comprising conveyor means movably supporting a workpiece, sensing means arranged proximate to said conveyor means for contacting said workpiece to determine at least one dimension of said workpiece, first control means coupled to said sensing means and responsive to said sensing means, workpiece guiding means arranged in said machine at a level above said conveyor means and adjacent to said sensing means, said workpiece guiding means comprising drive means for moving

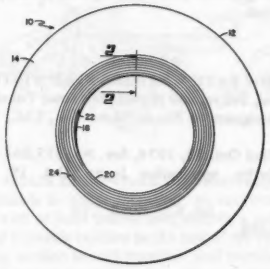


said workpiece guiding means relative to said workpiece, and second control means coupled to said workpiece guiding means for cooperation with said first control means for controlling said drive means and thus the movement of said workpiece guiding means in accordance with the dimension of said workpiece as determined by said sensing means.

3,939,612
REINFORCED GRINDING WHEEL

George N. Peterson, Grafton, Mass., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 2, 1971, Ser. No. 149,145
Int. Cl.² B24D *5/04, 7/02*
U.S. Cl. 51—293 **7 Claims**



1. A reinforced grinding wheel comprising:
an abrasive grinding wheel having an inner diameter and a pair of side faces;
a length of wire positioned on at least one of the side faces of said wheel in a spiral pattern beginning adjacent the inner diameter and having successive turns substantially abutting one another and positioned progressively radially outward with respect to the side face of said wheel; and
means for bonding the wire to the side wall of the wheel whereby the wheel is reinforced.

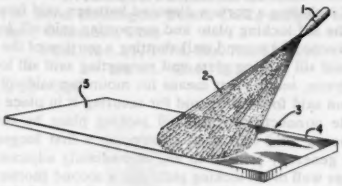
3,939,613
IMPACTING PROCESS

Joseph W. Ayers, 640 N. 13th St., Easton, Pa. 18042

Filed Nov. 8, 1973, Ser. No. 413,818
Int. Cl.² B24C *11/00*
U.S. Cl. 51—320 **5 Claims**

1. In the process of treating hard surfaces by impact which comprises continually bombarding them with selectively sized fine hard granules hurled against them at high velocity, the improvement wherein said granules are a selectively sized

fraction of the grains of a mass of refined zircon sand, said grains having rounded oblong configurations and having a



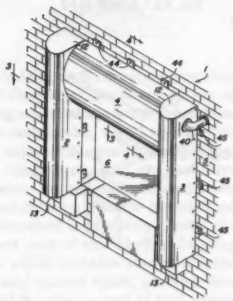
specific gravity of about 4.7 and their sizes being within the range of from −60 mesh to +325 mesh sieve sizes.

3,939,614

LOADING DOCK SEAL

Cyril P. Frommelt, and Sylvan J. Frommelt, both of Dubuque, assignors to Dubuque Awning & Tent Company, Dubuque, Iowa

Filed July 26, 1974, Ser. No. 492,161
Int. Cl.² E06B 7/22
U.S. Cl. 52—2 8 Claims



1. In a loading dock seal of the type to sealingly engage a truck disposed in loading and unloading position relative to a doorway in a warehouse wall,
   a. an elongated section, and
   b. means for securing said section on such a wall in position to extend along such a doorway in position to so engage such a truck
   c. said section comprising
      1. an elongated backing member adapted to be mounted on such a wall with one side thereof disposed in facing relation to said wall,
      2. an elongated compressible resilient pad mounted on the side of said backing member remote from said one side, and
      3. an inflatable member
         a. secured to said backing member by means disposed exteriorly of said pad, and
         b. projecting outwardly from the side of said pad remote from said backing member,
   d. said pad being secured to said second mentioned side of said backing member in substantially covering relation thereto,
   e. said inflatable member comprising a tubular portion having two spaced securing means extending therefrom, and
   f. said securing means being secured to respective opposite edge portions of said backing member in position to support said tubular portion in overlying juxtaposition to said side of said pad remote from said backing member.

3,939,615

FOLDABLE ROOF CONSTRUCTION ELEMENT

Roger Sorkin, 17 Dug Road, Lansing, N.Y. 14882

Filed Apr. 5, 1974, Ser. No. 458,320
Int. Cl.² E04B 1/32
U.S. Cl. 52—80 26 Claims

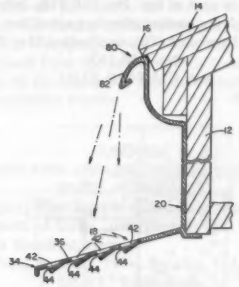
1. A foldable construction element for forming a roof construction, comprising
   a. a plane four-sided polygonal sheet containing at least four sets of fold lines associated with the edges of said sheet, respectively, thereby to cause each of the edges of said sheet to be intersected by at least one of said sets of fold lines;
   b. each of said fold-lines of said set defining a curve which extends from a first point of intersection with the associated edge inwardly toward a central region of said sheet and back to a second point of intersection on said associated edge, whereby upon selective folding of the sheet along the fold lines, a three-dimensional structural body of desired configuration is obtained.

3,939,616

RAIN WATER RUN-OFF DISPERSER

Richard L. Schapker, 134 Farnum St., North Andover, Mass. 01845

Continuation-in-part of Ser. No. 382,758, July 26, 1973, abandoned. This application Jan. 3, 1975, Ser. No. 538,364
Int. Cl.² E04D 13/00
U.S. Cl. 52—94 6 Claims



1. A rain water run-off disperser capable of intercepting the consolidated flow of water run-off from a roof of a building and, without collection, dispersing it in a non-erosive shower of water over an extended area of ground, said disperser comprising a disperser structure adapted for mounting in a position horizontally aligned with and spaced a distance below the edge of a roof and a substantial distance above the ground in the path of water falling from said roof, said disperser structure being elongated and of width sufficient to intercept the path of the falling water, said disperser structure defining a multiplicity of separate paths constructed to separate into a dispersed shower downwardly the consolidated flow of water run-off intercepted by said disperser structure and cooperative non-collecting mounting means for said disperser structure, capable of supporting said disperser structure in said position without impeding the flow of water to and through said disperser structure in shower to the ground.

3,939,617

METAL HOLDER FOR DISPOSING A GUIDE STRUCTURE ON A CONCRETE FOUNDATION

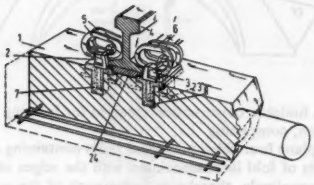
Jacob Albertus Eisses, Haydnlaan 4, Bilthoven, Netherlands

Filed July 2, 1974, Ser. No. 485,211

Claims priority, application Netherlands, July 10, 1973, 7309640

Int. Cl.² E02D 5/74

U.S. Cl. 52—166 **9 Claims**



1. A metal holder for disposing a guide structure on a concrete foundation, the holder having a top part in the form of an open housing which serves for lateral retention of the guide structure and in which fastening means can engage, the housing being provided with anchoring parts at the underside, characterised in that the housing is provided with a metal baseplate disposed in a plastic mortar panel which adjoins all round the housing by a horizontal top surface and which adjoins a layer of plastic mortar on the underside, said layer of plastic mortar completely surrounding the anchoring parts of the housing.

3,939,618

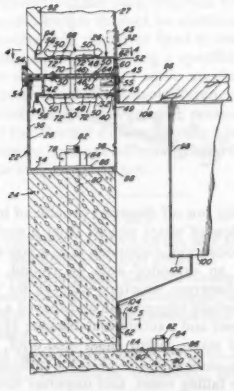
FOUNDATION ASSEMBLIES FOR BUILDING STRUCTURES

Wesley T. Murphy, Auburn, N.Y., assignor to Vercon Products, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 160,018, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 85,533, Oct. 30, 1970, abandoned. This application May 7, 1973, Ser. No. 358,193

Int. Cl.² E02D 27/01

U.S. Cl. 52—274 **9 Claims**



1. A foundation assembly for a building including a concrete foundation and a vertical wall panel having an edge, said assembly comprising a sill plate and a sill locking plate mounted on the sill plate, said sill locking plate comprising a first longer wall and a second shorter wall, said walls running generally parallel to one another and connected by a bridging section, each wall terminating in a free edge tab which defines a space therebetween, said sill plate comprising a base having a first and a second wall projecting upward therefrom, said first wall including a portion disposed between said free edge tabs of the sill locking plate and supporting said sill locking plate thereon, said second wall abutting a portion of the short wall of said sill locking plate and supporting said sill locking plate thereon, securement means for mounting said sill plate directly on said foundation and for securing it in place and a wall plate connected to said sill locking plate by rotating clamp means, said wall plate comprising a first longer wall disposed generally parallel to and immediately adjacent said first longer wall of sill locking plate and a second shorter wall, the first and second walls running generally parallel to one another and connected by a bridging section, each wall terminating in a vertical free edge tab which defines a space therebetween into which the edge of a vertical wall panel is disposed.

3,939,619

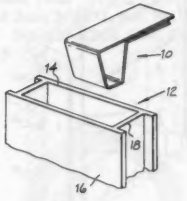
FACING WALL CONSTRUCTION

Richard Bell Mason, Cherry Hill, N.J., assignor to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 166,237, July 26, 1971, abandoned, which is a continuation of Ser. No. 846,830, Aug. 1, 1969, abandoned. This application Apr. 19, 1974, Ser. No. 462,474

Int. Cl.² E04B 1/38

U.S. Cl. 52—509 **3 Claims**



1. In a facing panel installation in which a hollow core panel is attached to a building structure, the panel having an opening extending substantially throughout the vertical extent of the panel, the improvement comprising:

a. a clip having a cup portion inserted in said opening of the hollow core panel adjacent a horizontal edge of the panel,

b. the cup portion having two oppositely facing side walls, each of which engages one of the interior panel wall surfaces forming the opening, and a bottom wall connecting the ends of the side walls remote from the horizontal edge of the panel,

c. the cup portion of the clip normally being of tapered shape with the ends of the side walls remote from the bottom wall being spaced farther apart than the ends of the side walls connected to the bottom wall, and the distance between the interior panel wall surfaces forming the opening being slightly less than the maximum spacing of the side walls of the cup portion in normal unstressed condition, whereby the said ends of the side walls remote from the bottom wall are forced toward each other by the interior panel wall surfaces upon insertion of the cup portion into the opening of the hollow core panel,

d. extension means connected to the other ends of the side walls of the cup portion of the clip and attached to the structural wall, said extension means comprising two laterally extending arms connected to the side walls of the cup portion of said clip, and

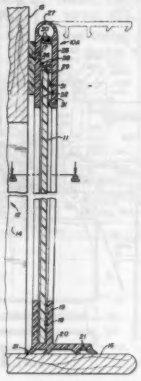
e. the side walls of the cup portion, at least adjacent to the horizontal edge of the panel, being biased away from each other toward and into engagement with the interior wall surfaces forming the opening of the hollow core panel.

3,939,620

EXTRUDED PLASTIC PANEL-HOLDING STRIP HAVING INTEGRAL FLEXIBLE HINGE

Robert D. Bero, Huntington Beach, Calif., assignor to Plasko-lite, Inc., Columbus, Ohio

Filed Nov. 11, 1974, Ser. No. 522,598
Int. Cl.² E04C 2/38
U.S. Cl. 52—716 5 Claims



1. A panel-holding strip comprising an elongated, one-piece body of dual durometer, extruded plastic composition, said body including a pair of opposed, longitudinally coextensive, generally flat rectangular, rigid, channel-forming webs connected along adjacent longitudinal edges thereof by an intergral, flexible hinge web, said channel-forming webs being movable between an angularly related open position and a closed, channel-defining position in which said channel-forming webs are disposed in relatively closely spaced apart parallel relation, and each of said channel-forming webs having an inner surface which includes sets of longitudinally coextensive, transversely spaced apart, parallel, inwardly projecting ribs, one set of the ribs on one of said channel-forming webs being arranged to frictionally interlock with a set of ribs on the other of said channel-forming webs to releaseably hold said channel-forming webs in their closed, channel-defining position, and other sets of the ribs on each of said channel-forming webs being flexible and being arranged in spaced opposition to one another to frictionally grip and seal the edge of a panel inserted between said channel-forming webs when they occupy their closed, channel-defining position.

3,939,621

PROCESSING OF SHEETS OF PRINTED SECURITY PAPERS INTO BUNDLES AND PACKETS

Gualtiero Giori, Lonay, Switzerland, assignor to De La Rue Giori S.A., Switzerland

Filed Mar. 17, 1975, Ser. No. 559,236
Claims priority, application Switzerland, Mar. 26, 1974, 4183/74
Int. Cl.² B65B 63/00, 57/14
U.S. Cl. 53—23 20 Claims

1. An installation for processing piles each formed of a constant number of sheets each printed with N numbered security papers such as banknotes, in which the numbering of the security papers at like positions of the successive sheets of each pile and of the successive piles is in an uninterrupted sequence, and on which sheets some of the security papers may bear control marks recording imperfections, into bundles of security papers each having said constant number of security papers in sequential order and arranged in packets of sequentially numbered bundles, in which said imperfect security papers are replaced by perfect ones, comprising:

means for receiving a pile of sheets and cutting the pile into N bundles of security papers;

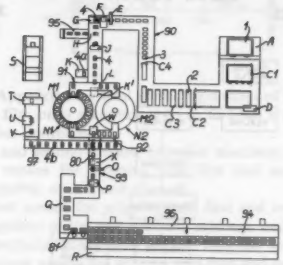
means for conveying the bundles of each successively cut pile in a given order along a first path;

a detector for detecting the presence in a bundle along said first path of at least one marked imperfect security paper;

means responsive to said detector for deviating from said first path said bundles including imperfect security papers;

means for placing dummy bundles each in the place in said first path formerly occupied by a deviated bundle;

a bundle collecting device including N individual magazines for receiving respective ones of the N bundles formed from each pile of sheets, and the respective replaced



dummy bundles, at the end of said first path to form N packets of a given number of bundles from a given number of piles;

means for conveying the packets of bundles from said collecting device along a second path to a packet wrapping device;

a substitution station for receiving said deviated bundles and treating them to remove imperfect security papers and replace them by perfect numbered security papers, and reform the bundles in the correct order;

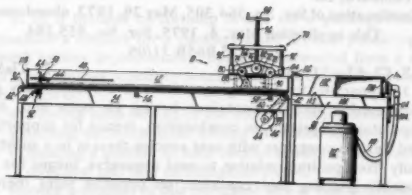
and at least one bundle replacement station located before said packet wrapping device where said dummy bundles are removed from the at least partly formed packets and replaced by the respective reformed bundles delivered by said substitution station.

3,939,622

METHOD AND APPARATUS FOR PACKAGING INSULATED DUCT

Robert Murphy, West Hartford, and Norman J. Perusse, Farmington, both of Conn., assignors to The Wiremold Company, West Hartford, Conn.

Filed Nov. 15, 1974, Ser. No. 523,987
Int. Cl.² B65B 63/02
U.S. Cl. 53—24 14 Claims



14. A method of packaging tubular duct, which is longitudinally compressible, into a container of reduced length relative to the duct and comprising the steps of conveying a leading end of fully extended duct into an open entry end of a container, exhausting air from the duct to produce a partial vac-

uum within the duct after the leading end of the duct is received in the container and an end closure is temporarily applied to an open trailing end of the duct while a vacuum nozzle is exhausting air from an apertured end of the container opposite its entry end, and driving the trailing end of the duct into the container under partial vacuum.

3,939,623

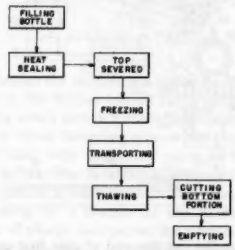
PLASMA COLLECTION SYSTEM

Dennis F. Shine, Huntington Beach, Calif., and Gunther W. Torau, Buffalo Grove, Ill., assignors to Baxter Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 427,197, Dec. 21, 1973, abandoned. This application May 22, 1975, Ser. No. 579,768

Int. Cl.² B65B *3/04*

U.S. Cl. 53—25 **3 Claims**



1. A method of sterile collecting blood plasma for use in blood fractionation procedures comprising providing ingress through the top of a thermoplastic bottle, with a sharpened cannula at the distal end of a tubular means, said thermoplastic bottle having been sterile blow-molded and hermetically sealed without a port and with a flattened constricted neck portion, the proximal end of said means being connected to a blood plasma donor set, introducing a quantity of blood plasma from said blood plasma donor set through said tubular means into said thermoplastic bottle, further flattening said flattened constricted neck portion whereby the inner surfaces of the oppositely disposed flattened constricted neck portion sealingly abut, simultaneously applying heat to said flattened neck portion whereby the said abutting surfaces adhere to one another, and thereafter freezing and thawing said collected blood plasma and transferring into larger containers by cutting open said thermoplastic bottle substantially near the bottom portion and pouring said blood plasma therefrom.

3,939,624

PACKAGING APPARATUS

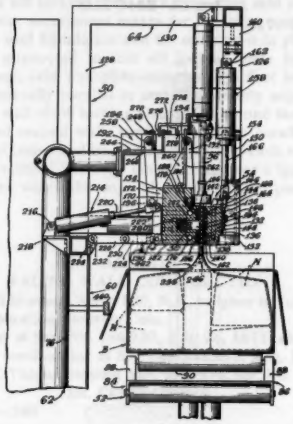
Kenneth L. Gidewall, Clarendon Hills, and Larry W. Heavner, Glen Ellyn, both of Ill., assignors to C. V. P. Systems Inc., Lombard, Ill.

Continuation of Ser. No. 364,305, May 29, 1973, abandoned. This application Mar. 4, 1975, Ser. No. 555,284

Int. Cl.² B65B *31/06*

U.S. Cl. 53—112 B **71 Claims**

1. Apparatus for packaging articles in a substantially gas impermeable flexible container having an open end, said apparatus comprising, in combination, means for supporting said flexible container with said articles therein in a substantially fixed position relative to said apparatus, means for releasably gripping said container on opposite sides thereof along said open end, means for moving said gripping means between open and closed positions while carrying said container sides, passage defining means, means for moving said passage defining means into and out of said container, means for temporarily sealing said flexible container along said gripping means whether said passage means is in or out of said container, said temporary sealing means being carried by said gripping means, means for selectively vacuumizing and adding a gas into said container through said passage defining means while said container is temporarily sealed, said temporary sealing means maintaining said container in said temporarily



sealed condition as said passage defining means is being moved out of said container, and means for effecting a self-sustaining seal of the sides of said container after said passage defining means is out of said container for maintaining said gas in said container and while said temporary sealing means continues to maintain said container in a sealed condition.

3,939,625

DEVICE FOR PRINTING AND FEEDING COVERS TO CONTAINERS

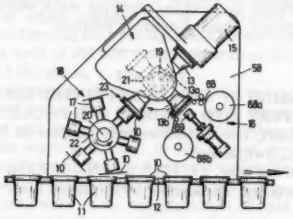
Karl Remele, and Dieter Weiberg, both of Schloss Holte-Stukenbrock, Germany, assignors to Karl Remele, Schloss Holte-Stukenbrock, Germany

Filed Apr. 21, 1975, Ser. No. 570,133

Claims priority, application Germany, Apr. 19, 1974, 2418893

Int. Cl.² B65B *61/00*

U.S. Cl. 53—131 **16 Claims**



1. A device for printing and feeding covers to containers, characterised in that a rotating pick-up is provided above a conveyor for moving the containers and provided with a plurality of suction heads for taking the covers from a magazine by their side opposed to the visible side, and keeping them on a certain path of rotation, a printing mechanism printing the covers on their visible side, being associated with this pick-up, and a rotating turning device, provided with several suction heads for engaging the printed covers by their visible side and receiving them from the pick-up, keeping them in a certain path of rotation and then depositing them on the containers,

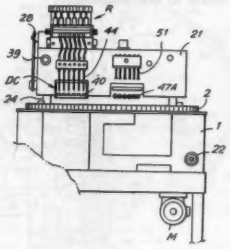
is provided for the pick-up in the direction of rotation behind the printing mechanism.

3,939,626

MACHINE FOR AUTOMATIC FILLING AND SEALING OF GLASS VIALS

Elisabetta Cioni; Lucia Cioni, and Rovena Anichini Cioni, all of Via di Marciano 22, Siena, Italy (I-53100)

Filed Aug. 16, 1974, Ser. No. 498,043
Claims priority, application Italy, Aug. 21, 1973, 9594/73
Int. Cl.² B65B 7/16
U.S. Cl. 53—167 8 Claims



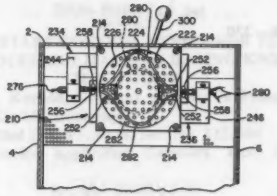
1. A machine for filling and sealing glass vials comprising, in combination, a frame having an upper support surface; endless conveyor means operable to receive the vials and to move the vials along said support surface; said endless conveyor means comprising an endless gear belt having secured thereto, in adjacent relation, a plurality of receptacles adapted to have the vials inserted thereinto from above for resting on said support surface, said receptacles maintaining the vials in an upright orientation during travel of the vials along said support surface; indexing means operatively connected to said conveyor means and operable to step said endless belt and said receptacles, cyclically and repetitively, so a distance equal to the length of said endless belt spanned by a plurality of said vials; feeding means positioned at a feeding station adjacent said conveyor means and operable, cyclically and repetitively, to feed, into said receptacles, a plurality of vials simultaneously, the plurality of vials being equal to the number of vials in said length span; filling means positioned adjacent said conveyor means downstream of said feeding means in the direction of movement of said endless belt, for filling the vials with a liquid; said filling means comprising a plurality of syringes equal in number to said plurality of vials fed simultaneously by said feeding means and a plurality of needles, equal in number to said plurality of syringes, each communicating with a respective syringe; sealing means positioned adjacent said conveyor means downstream from said filling means in the direction of movement of said endless belt; said sealing means comprising a plurality of burners equal in number to the number of vials fed simultaneously to said receptacles by said feeding means, and a plurality of pinch means, equal in number to the number of said burners; said burners and the respective associated pinch means being disposed at contiguous sealing stations along the length of said conveyor means whereby the plurality of vials can be sealed simultaneously; rotating means at said sealing means operable, during the sealing operation, to engage and rotate the plurality of vials being simultanously sealed; discharge means positioned adjacent said conveyor means downstream of said sealing means in the direction of movement of said endless belt and operable to remove, from said conveyor means, the filled and sealed vials; and drive means mounted in said frame and including respective control cams for said indexing, feeding, filling, sealing, rotating and discharge means.

3,939,627

APPARATUS FOR CAPPING CONTAINERS

Seymour Mermelstein, Newton, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed June 10, 1974, Ser. No. 477,700
Int. Cl.² B67B 3/04; B65B 53/02
U.S. Cl. 53—329 19 Claims



18. Apparatus for heat shrinking a sheet of heat shrinkable plastic film onto a container so as to form a closure for said container comprising:

first and second flexible heatable members;

first means for gripping said first and second members together at one end thereof;

second means for gripping said first and second members together at the end opposite said one end thereof; and

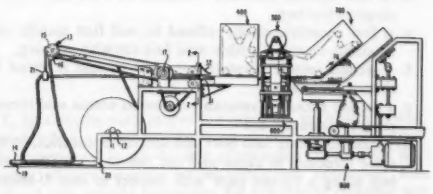
bidirectionally movable means coupled to said first and second means for moving said first and second means so as to selectively cause said members to (a) flex in a first direction and move away from one another intermediate their opposite ends so as to provide a space therebetween for insertion of a sheet of heat shrinkable film and a container to be capped with said film or (b) flex in a second opposite direction and move closer to one another intermediate said opposite ends so as to press portions of said sheet against said container.

3,939,628

BAG AND PACKAGE MAKING METHOD

Gilmore T. Schjeldahl, Minnetonka, Minn., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed July 26, 1974, Ser. No. 492,227
Int. Cl.² B65B 9/10, 9/14, 1/02
U.S. Cl. 53—29 5 Claims



1. In a method of forming in-line on a package-making machine a closure for a package using tubular plastic open-mesh netting in continuous rope form unwound from a reel, in a continuous repetitive manner, an improvement including the steps of:

expanding such netting in the cross-machine direction;

gathering such expanded netting in rucked form;

expanding a portion of such rucked netting in the machine direction and into an elongated sleeve;

moving a portion of this elongated sleeve while maintained in the expanded state into operative relationship with a closure applying means; and

applying a closure across such portion of this expanded sleeve while holding such portion of the sleeve in such operative relationship with such closure applying means, thereby forming a closure for such package.

3,939,629
TRANSVERSE BEATING DEVICE FOR A GRAPE-GATHERING MACHINE

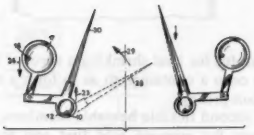
Alain Bruel, Domaine du Petit Chaumont, Alques-Mortes (Gard), France

Filed July 26, 1973, Ser. No. 383,015

Claims priority, application France, Jan. 10, 1973, 73.01356

Int. Cl.² A01D *46/00*

U.S. Cl. 56—330 **4 Claims**



1. In a mobile grape gathering machine of the type wherein a generally inverted U-shaped structure passes over at least one row of vine stocks, said structure having at least two beating devices with a plurality of flexible rods emanating therefrom to beat or shake the vine stocks to remove the graps therefrom, mounted within said said inverted U-shape, the improvement wherein each beater mechanism comprises:

a. a rod carrying plate to which is affixed one end of each of the plurality of flexible rods, said rod carrying plate having an integral crank pin extension with a first circular opening therethrough,

b. a lever having a first end rigidly affixed to said rod carrying plate and a second end,

c. a connecting rod having a first end pivotally attached to said second end of said lever, and a second end having an integral enlarged portion with a second circular opening therethrough,

d. a first spindle pivotally attached to said inverted U-shaped structure,

e. a first eccentric rigidly affixed to said first spindle and rotatably mounted within said first circular opening,

f. a second spindle pivotally attached to said inverted U-shaped structure,

g. a second eccentric rotatably mounted within said second circular opening, and

h. means to rotate said first and second eccentrics, in the same direction to cause said rod carrying plate to translate along a curved path with respect to said U-shaped structure.

3,939,630
CROP-FEED ARRANGEMENT FOR HAY BALER

Rudolf Schulze, Neustadt; Horst Schumacher, Langburkersdorf, and Ferdinand Simora, Bonnewitz, all of Germany, assignors to VEB Kombinat Fortschritt Landmaschinen, Neustadt in Saxony, Germany

Filed Mar. 8, 1973, Ser. No. 339,185

Claims priority, application Germany, May 23, 1972, I63124

Int. Cl.² A01D *39/00*

U.S. Cl. 56—341 **1 Claim**

1. A baling apparatus comprising:

a housing displaceable along the ground in a travel direction;

a pickup drum at the front of said housing and rotatable about an axis transverse to said direction;

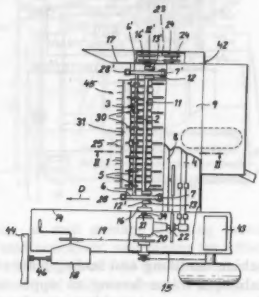
means forming a channel in said housing extending transverse to said direction in back of said drum all along the latter;

means forming a baling chamber extending in said direction on said housing at one end of said channel and along a side of said drum;

drive means on said housing for rotating said drum and thereby lifting crop off the ground and displacing the crop back toward said channel;

an oscillatable shaft member on said housing extending transversely to said direction above said drum and said channel;

a plurality of pusher elements on said member displaceable from said drum to said channel;



torsion spring means between each element and said shaft member for yieldably resisting uneven displacement of each element relative to said shaft member;

eccentric means operable by said drive means and coupling means connecting said eccentric means to said member for oscillating said elements at a relatively slow rate to displace said crop from said drum into said channel and at a relatively rapid rate away from said channel;

a rod extending along said member and engageable with said elements for retaining same against the force of said spring means;

means in said channel and mounted on said housing for displacing crop therealong into said chamber; and

means in said chamber and mounted on said housing for forming bales of said crop.

3,939,631
HAY ROLL FORMING MACHINE

Allison W. Blanshine, Lititz, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed June 3, 1974, Ser. No. 476,020

Int. Cl.² A01D *39/00*

U.S. Cl. 56—341 **6 Claims**

1. A machine for forming a roll of crop material, comprising in combination:

a. a mobile frame adapted to travel across a field;

b. material delivery means supported by said frame;

c. endless flexible means mounted upon said frame above said delivery means;

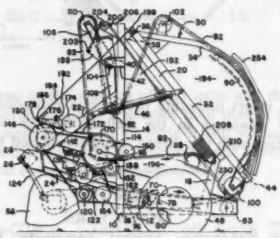
d. said delivery means together with said endless flexible means defining a roll forming region therebetween spaced above the field and extending between opposite sides of said frame;

e. means on said frame to drive at least a portion of said delivery means in a predetermined direction to deliver crop material from the field to said roll forming region and also drive said endless flexible means for movement in a direction opposite to that of said portion of said delivery means, said endless flexible means engaging a

circumferential area of a roll of crop material when said roll is being formed within said roll-forming region;

f. positioning means movably mounted by said frame and engaged with said endless flexible means; and

g. spring means supported by said frame and interconnected to said positioning means for imposing a pulling force thereon which normally disposes the same in a first position which in turn disposes said endless flexible means in a contracted position, said spring means being capable of progressively yielding under the imposition of a progressively increasing reverse pulling force thereon, said spring means so yielding when such reverse force is imposed thereon by said endless flexible means through said positioning means as said flexible means expands from its contracted position and said positioning means moves away from its first position due to engagement of said endless flexible means with increasing circumferential areas of the roll as the diameter thereof increases during forming of the roll at said roll-forming region, said spring means in so yielding due to such increasing reverse pulling force being imposed thereon causing a substantially uniform pressure to be exerted upon said roll within said roll-forming region by said endless flexible means as increasing circumferential areas of said roll are engaged by said endless flexible means to thereby produce a roll of crop material having substantially uniform density throughout said roll.



3,939,632

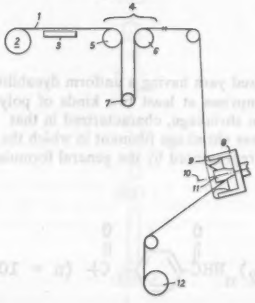
PROCESS FOR THE PRODUCTION OF EFFECT YARNS

Werner Doschko, Nussloch, and Hans Pscheidl, Heidelberg, both of Germany, assignors to Imperial Chemical Industries Limited, London, England

Filed May 14, 1973, Ser. No. 257,404

Int. Cl.[2] D02G *1/02*; D01H *7/92*; D02G *1/04*

U.S. Cl. 57—34 HS **10 Claims**



10. In an apparatus for the production of continuously textured effect yarns comprising yarn feed means, means for heating the yarn to a temperature above its second order transition temperature, means for false twisting comprising a friction twist bush which bears against the yarn, and takeup means, the improvement constituting means for periodically reducing the twist set in the yarn, said means comprising a yarn guide for altering the arc of contact between the twist bush and the yarn.

3,939,633

SPINDLE START CONTROL DEVICE FOR TEXTILE YARN PROCESSING MACHINE HAVING KNOTTING MECHANISM

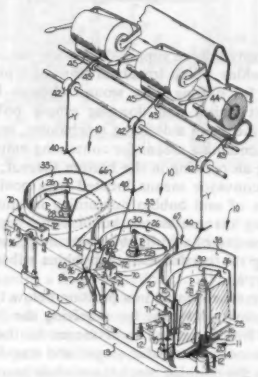
Ulrich Lossa, Krefeld, Germany, assignor to Palitex Project Company GmbH, Germany

Filed Oct. 17, 1974, Ser. No. 515,694

Claims priority, application Germany, Oct. 17, 1973, 2352022

Int. Cl.[2] D01H *15/00*

U.S. Cl. 57—34 R **7 Claims**



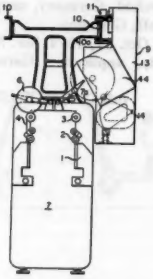
1. In a textile yarn processing machine, such as a twister, spinning frame or the like, having a plurality of spindle assemblies positioned in side-by-side relationship thereon for processing of yarn, control means operatively connected with each of said spindle assemblies for selectively stopping and starting operation of said respective spindle assemblies, and a yarn knotter mechanism for being selectively positioned in front of each spindle assembly in the event of a broken or otherwise separated yarn therein for knotting together the two ends of the separated yarn when said spindle assembly is stopped by said control means and including selectively actuatable means for operating said knotter mechanism for the knotting operation; the improvement of

means operatively connected with said operating means of said knotter mechanism and said spindle assembly stopping and starting control means and being responsive to actuation of said operating means of said knotter mechanism for actuating said control means to start operation of said spindle assembly for the processing of yarn, thereby reducing lost operating time due to the yarn separation.

3,939,634
EMPTY BOBBIN SUPPLY DEVICE

Toshio Yoshizawa, Chiryu; Yasuo Yamada; Toshinori Taniguchi, both of Kariya; Tatsuo Kose; Kazuo Ohchi, both of Wakayama, and Kiyokazu Hori, Sabae, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and Daiwa Boseki Kabushiki Kaisha, Osaka, both of, Japan

Filed Jan. 3, 1974, Ser. No. 430,513
Int. Cl.² D01H 9/10
U.S. Cl. 57—53 15 Claims



1. An empty bobbin supply device for use in an automatic doffing machine which travels in front of a plurality of spinning units for doffing fully wound cheeses by means of a doffing mechanism and donning empty bobbins in place thereof by means of a donning mechanism, comprising:

bobbin containing means for containing empty bobbins and having an opening in the bottom thereof;

endless conveyor means located in a position under the bottom of said bobbin containing means for separately carrying thereon empty bobbins moving down through the opening of said bobbin containing means and transferring the carried empty bobbins substantially downwardly; and

transfer means located in a position below the lower run of said conveyor means for receiving the bobbins coming down from said conveyor means in the absence of a bobbin on said transfer means and transferring the bobbins to the donning mechanism while remaining at a level below the lower run of said conveyor means.

3,939,635
BALLOON LIMITER WITH WETTING MEANS IN A TEXTILE MACHINE

Karl-Heinz Rehn, Remscheid-Lennep, and Heinz Middelmann, Radevormwald, both of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

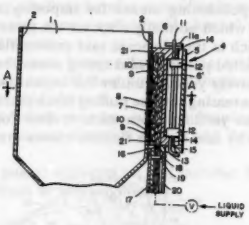
Filed Feb. 19, 1975, Ser. No. 551,065
Claims priority, application Germany, Feb. 21, 1974, 7406049[U]
Int. Cl.² D01H 13/12, 13/30
U.S. Cl. 57—108 7 Claims

1. In a textile machine having a balloon limiter of circular cross-section with wetting means to supply a liquid for treatment of a thread conducted through the balloon limiter, said wetting means including a casing which contains at least one liquid impregnated insert arranged over openings in the wall of the balloon limiter to permit a flow of the treatment liquid from said impregnated insert into the interior of said limiter, the improvement which comprises:

a holder arranged on the outer circumference of the balloon limiter wall to hold said casing;

clamping means to releasably fasten said casing in said holder; and

at least one absorbent insert within said casing for transmitting the treatment liquid into the balloon limiter interior,

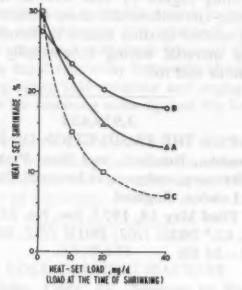


said insert including projections extending through the flow openings in the balloon limiter wall for direct contact with the thread being conducted therethrough.

3,939,636
MIXED YARN

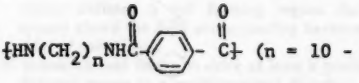
Yuzaburo Nakayama; Akinori Yamamoto, both of Otsu; Tomohiko Asahara, Ehime; Masaharu Shimamura; Yoshizo Tsuda, both of Otsu; Keisuke Igawa, Obu, and Mitsuhiro Okamoto, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 24, 1974, Ser. No. 491,273
Claims priority, application Japan, Aug. 24, 1973, 48-94347
Int. Cl.² D02G 3/24, 1/18
U.S. Cl. 57—140 BY 11 Claims



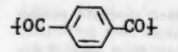
1. A mixed yarn having a uniform dyeability to an acid dye which comprises at least two kinds of polyamide filaments differing in shrinkage, characterized in that

A. a lower shrinkage filament in which the amount of units each represented by the general formula



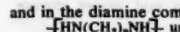
$$\left[HN(CH_2)_nNHC-\langle\bigcirc\rangle-C\right] \quad (n = 10 - 13) \quad (1)$$

or the sum total of the amount of said units and the amount of other isomorphous units is at least 75 mole %, and in the carboxylic acid component in the polymer,



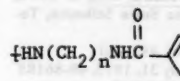
(2)

and in the diamine component in the polymer,



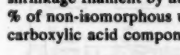
(3)

and, (B) a higher shrinkage filament in which the amount of units each represented by the general formula



(4)

or the sum total of the amount of said units and the amount of other isomorphous units is smaller than that of said lower shrinkage filament by at least 15 mole % and at least 20 mole % of non-isomorphous units is contained, and wherein in the carboxylic acid component in the polymer,



(5)

and in the diamine component in the polymer,

(6)

wherein the content of amino end groups in the lower shrinkage polymer is about $5 \times 10^{-5} - 12 \times 10^{-5}$ mole/g, said content in the higher shrinkage polymer is about $3 \times 10^{-5} - 10 \times 10^{-5}$ mole/g and the content of amino end group in the lower shrinkage filament is larger than that in the higher shrinkage filament by about $2 \times 10^{-5} - 8 \times 10^{-5}$ mole/g.

3,939,637

UNSTRETECHED POLYETHYLENE TEREPHTHALATE YARN IN CONTINUOUS STRETCHING AND FALSE TWIST TEXTURIZING PROCESSES

Günther Franz, Goggingen; Karl Heinrich, Bobingen, and Herbert Poppe, Konigsbrunn, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 5, 1973, Ser. No. 338,312

Claims priority, application Germany, Mar. 11, 1972, 2211843

Int. Cl.² D02G *1/02*

U.S. Cl. 57—140 R **4 Claims**

1. Improvement in continuous stretching and false twist texturizing processes for the manufacture of voluminous yarns from unstretched spun filaments of polyesters comprising at least preponderantly polyethylene terephthalate structural units, which comprises using unstretched but pre-oriented spun filaments having a degree of pre-orientation characterized by a natural stretching ratio of about 1:2.0 to about 1:1.4, feeding the said filaments to continuously working stretching and false twist texturizing devices, stretching the said yarns at a stretch ratio of about 1:2.3 to about 1:1.7, and winding up the texturized yarns obtained.

3,939,638

METHOD FOR AUTOMATICALLY STARTING AND STOPPING AN OPEN-END SPINNING MACHINE

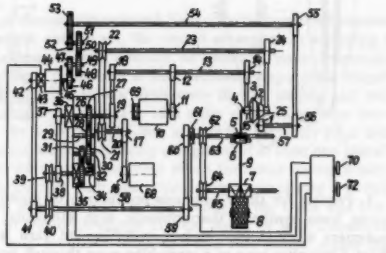
Klaus Bruckert, Bremen; Herbert Hoffmann, Schwanewede; Gerhard Kutscher, Bremen; Rolf Neubert, Bremen, and Rolf Wehling, Bremen, all of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 20, 1974, Ser. No. 453,072

Claims priority, application Germany, Mar. 20, 1973, 2313788

Int. Cl.² D01H *1/30, 1/34*

U.S. Cl. 57—156 **12 Claims**



1. In a method for the automatic starting and stopping of an open-end spinning machine system containing a plurality of spinning units, the components of each unit including a spinning turbine having a fiber collection trough, a breakup roller, a feed roller, a yarn extraction device and a yarn winding apparatus, wherein, during stopping of the system, the rates of rotation of the turbine, the feed roller, the yarn extraction device and the yarn winding apparatus of each unit are simultaneously reduced to below the normal spinning speed before being completely stopped, and the end of each yarn being spun remains in its spinning turbine and during restarting of the system each yarn extraction device and winding apparatus are caused to move opposite to their direction of normal movement for a limited time to feed the yarn end back into the spinning turbine, and the spinning turbine, the feed roller, the yarn extraction device and the yarn winding apparatus are brought to a rated speed below the normal spinning speed in order to start the spinning process, the improvement wherein:

a. the stopping of the system, from an operating state, comprises the steps of:

i. effecting such simultaneous reduction in the rates of rotation of the turbine, feed roller, yarn extraction device and yarn winding apparatus of each unit by permitting the rates of rotation thereof to decrease in unison in a free run-down manner while remaining within the range permitting yarn spinning to continue, and

ii. positively and rapidly braking such components only when their rates of rotation reach the lower limit of such range; and

b. the restarting of the system comprises effecting such movement of the yarn extraction device and the winding apparatus of each unit opposite to their normal direction of movement by initially driving the yarn extraction device and the yarn winding apparatus of each unit through

a selected, fixed, distance in the direction opposite to their normal operating direction, which distance is independent of the existing speed of the system, for feeding a fixed, predetermined, length of yarn back into the fiber collection trough of the associated spinning turbine.

3,939,639

SPIN STRETCHING AND SPIN STRETCH TEXTURING OF MULTIFILAMENT YARNS

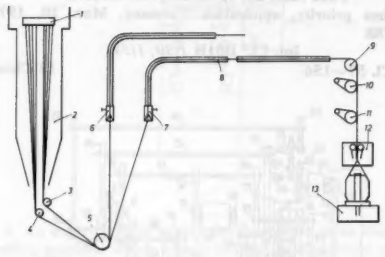
Konrad Ellegast, Leichlingen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 5, 1974, Ser. No. 476,460

Claims priority, application Germany, June 5, 1973, 2328499

Int. Cl.² D02J 1/22

U.S. Cl. 57—157 R **7 Claims**



1. Process for the continuous production of multifilament yarns from synthetic thermoplastic high molecular weight polymers wherein unstretched multifilament yarn is passed from a spinning zone to a stretching zone through protective tubes.

3,939,640

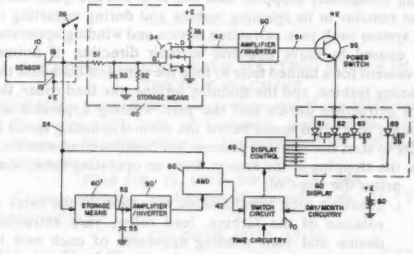
SYSTEM FOR ILLUMINATING THE DISPLAY OF A WRIST WATCH

Leonard R. Kahn, 70 N. Grove St., Freeport, L.I., N.Y. 11520

Filed Dec. 12, 1974, Ser. No. 532,065

Int. Cl.² G04C 3/00

U.S. Cl. 58—23 R **10 Claims**



1. A watch display system comprising;

a specific motion sensor,

a first storage means activated by the motion sensor for maintaining illumination of the display for a sufficient reading period after each perception of said motion,

means for connecting an electrical energy source to the display where said connecting means is controlled by the first storage means,

a second storage means having an appreciably longer storage period than the first storage means and which second storage means is also activated by the motion sensor,

AND gate means for sensing repeated specified motion within a specified period of time, and

means for switching the display system from time of day information circuitry to day/month circuitry when the AND circuitry output indicates the occurrence of the repeated specified motion within said longer storage period of time.

3,939,641

ELECTRONIC CIRCUIT FOR INDIVIDUALLY CORRECTING EACH DIGIT OF TIME DISPLAYED

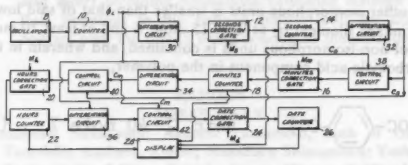
Izuhiko Nishimura, and Mitsuharu Kodaira, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 31, 1974, Ser. No. 493,428

Claims priority, application Japan, July 31, 1973, 48-86185

Int. Cl.² G04C 3/00; G04B 27/08

U.S. Cl. 58—23 R **8 Claims**



1. In an electronic timepiece comprising a quartz crystal oscillator circuit for producing a high frequency time standard signal, divider means coupled to said oscillator means for producing a low frequency time standard carry signal in response to said high frequency time standard signal, at least two series-connected divider stages coupled in series with said divider means, each divider stage other than the last of said series connected divider stages producing a low frequency carry signal in response to the low frequency carry signal applied thereto, at least a portion of said divider stages each producing timekeeping signals and display means associated with each said divider stage producing said timekeeping signals for displaying time in response to said respective timekeeping signals applied thereto, the improvement comprising correction gate means coupled to each said divider stage producing a timekeeping signal, each said correction gate means being adapted to apply the carry signal from the next previous divider stage to the divider stage to which said correction gate means is coupled and being adapted to correct each divider stage by advancing the count thereof, and a control circuit means connected to each divider stage to be corrected to receive the carry signal produced thereby and the carry signal applied to said divider stage to be corrected, said control circuit means inhibiting the transmission to the next divider stage following said divider stage to be corrected of that portion of the corrected carry signal representative of a carry due to correction.

3,939,642

ELECTRONIC TIMEPIECE SEMICONDUCTOR INTERGRATED CIRCUIT

Shinji Morozumi, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jan. 2, 1974, Ser. No. 429,992

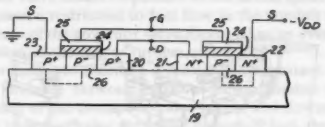
Claims priority, application Japan, Dec. 29, 1972, 48-503

Int. Cl.² G04C 3/00; H03K 21/00

U.S. Cl. 58—23 A **9 Claims**

1. In an electronic timepiece including an oscillator circuit for providing high frequency time standard signals, a divider circuit including a plurality of series-connected divider stages having applied thereto a high frequency time-keeping signal and in response thereto supplying low frequency timekeeping signals corresponding to present time, and display means for receiving and displaying time in response to said timekeeping

signals counted by said dividing circuit, the improvement comprising said oscillator circuit and each of said divider stages being integrated on a single circuit chip having a substrate formed from an insulating material including complementary coupled P-channel and N-channel MOS field effect transistors formed on the insulating substrate thereof in layers, the respective transistors on said substrate having a space therebetween.



3,939,643

CRYSTAL-CONTROLLED ELECTRONIC TIMEPIECE WITH CMOS SWITCHING AND FREQUENCY-DIVIDING CIRCUITS

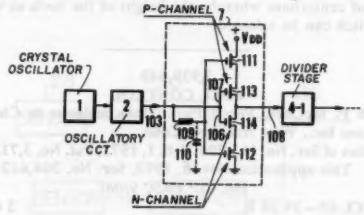
Yasuhiko Nishikubo, Iruma, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 30, 1974, Ser. No. 474,698

Claims priority, application Japan, June 7, 1973, 48-64183; Dec. 5, 1973, 48-138388; Jan. 7, 1974, 49-5175

Int. Cl.² G04C 3/00

U.S. Cl. 58—23 A 9 Claims



1. An electronic timepiece comprising:

crystal-controlled oscillator means of elevated operating frequency provided with an output circuit;

time-indicating means operable at a reduced frequency;

frequency-divider means inserted between said oscillator means and said time-indicating means for stepping down said elevated frequency to said reduced frequency; and

a switching circuit interposed between said output circuit and said frequency-divider means for deriving periodic trigger pulses for said frequency-divider means from an oscillator voltage of said elevated frequency, said switching circuit comprising two complementary MOSFETs and at least one further MOSFET with insulated gates serially connected across a direct-current supply, said output circuit including a first lead terminating at the gates of said complementary MOSFETs, a second lead terminating at the gate of said further MOSFET and delay means in one of said leads for relatively dephasing the oscillator voltage on said leads to an extent making all said MOSFETs simultaneously conductive for a time substantially shorter than a period of passage of said oscillator voltage between respective conduction thresholds of said complementary MOSFETs.

3,939,644

CIRCUIT ARRANGEMENT FOR CONTROLLING THE RUNNING OF A QUARTZ-CONTROLLED ELECTRIC CLOCK

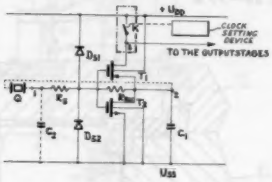
Hans-Peter Wolf, Horkheim, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed June 25, 1974, Ser. No. 483,072

Claims priority, application Germany, June 25, 1973, 2332237

Int. Cl.² G04C 3/00; G04B 27/08

U.S. Cl. 58—23 R 4 Claims



1. In a circuit arrangement for a quartz-controlled electric clock which can be set, the circuit arrangement including a supply voltage source, a motor, an oscillator stage, frequency divider stages connected to said oscillator stage, pulse shaper stages connected to said frequency divider stages, and two output stages connected to said pulse shaper stages for controlling the drive of the motor, at least the oscillator stage and each output stage each being composed of at least one Metal-Insulator-Semiconductor field effect transistor having a controllable current path, the improvement comprising a switch arranged to be operated during setting of the clock and connected to the controllable current paths of said transistors only in said oscillator stage and said two output stages for disconnecting said current paths from the supply voltage source, in order to terminate oscillation of said oscillator stage and stop said motor whereby said voltage source remained connected to said frequency divider stages during setting of the clock.

3,939,645

CALENDER TIMEPIECE MOVEMENT COMPRISING THREE INDICATORS

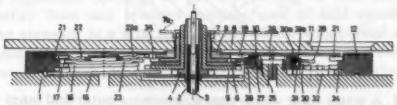
Adrien Maurice Charbonney, deceased, late of St. Blaise, Switzerland, by Jean-Jacques Thorens, legal representative, assignor to ETA A.G. Ebauches-Fabrik, Switzerland

Filed Aug. 9, 1974, Ser. No. 496,294

Claims priority, application Switzerland, Aug. 9, 1973, 11522/73

Int. Cl.² G04B 27/08

U.S. Cl. 58—85.5 9 Claims



1. A calendar time piece movement comprising three indicators, the first displaying the units figure of the date, the second displaying the tens figure of the date, and the third displaying the days of the week, an hour wheel, a driving mechanism actuated by said hour wheel and driving said indicators stepwise, and a correction mechanism, wherein said indicators are coaxial with said hour wheel, said correction mechanism comprising a rotating correction assembly and said driving mechanism comprising a calendar wheel actuating said first indicator, an intermediate rotating part coaxial with

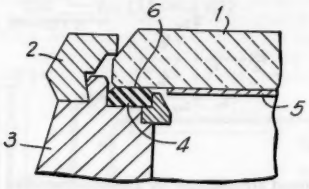
said calendar wheel, actuated by said first indicator and actuating said second indicator, and a shifting member coaxial with said correction assembly for shifting said third indicator.

3,939,646

WATER TIGHT WATCH CASE USING AN INORGANIC GLASS CRYSTAL

Hideaki Uchiyama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 17, 1974, Ser. No. 471,053
Claims priority, application Japan, May 21, 1973, 48-59681
Int. Cl.² G04B 37/08
U.S. Cl. 58—90 R 8 Claims



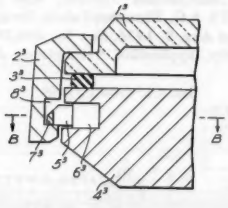
1. A water-tight watch case comprising an inorganic glass crystal, means hermetically sealing said crystal in a peripheral region thereof in the case, and a layer of water-absorptive resin having an unsaturated OH radical applied to said crystal at the inner surface thereof in a limited region to leave a bare peripheral zone at which the crystal is hermetically sealed, said means which hermetically seals the crystal in the case comprising a sealing element which bears against said crystal exclusively in said peripheral region where the layer of water-absorptive material is absent.

3,939,647

STRUCTURE OF WATER-TIGHT WATCH CASE

Tsutomu Miyasaka, and Akio Kitazume, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 19, 1974, Ser. No. 498,872
Claims priority, application Japan, Aug. 24, 1973, 48-94340
Int. Cl.² G04B 37/08
U.S. Cl. 58—90 R 12 Claims



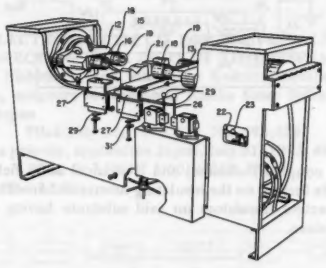
1. A water-tight watch case comprising outer and inner case bodies, glass means, an elastic gasket between said glass means and said inner case body, said outer case body sandwiching said glass means and gasket against said inner case body to provide a water-tight relation, said bodies being provided with opposed openings, an extended elastic element in one of the openings, said elastic element having free opposite ends with integral projections at said ends engaged in the other of said openings to press the gasket between the glass means and inner case body, said elastic element being secured in said one opening with its free ends extending in cantilever fashion such that said projections are resiliently engaged in said other of the openings.

3,939,648

MULTI-PITCH TOOL BAR FOR TRACK PRESSES

Laurie J. Cullen, Burlingame, Calif., assignor to Wolff Manufacturing Company, Burlingame, Calif.

Filed Dec. 6, 1974, Ser. No. 530,371
Int. Cl.² B21L 21/00
U.S. Cl. 59—11 4 Claims



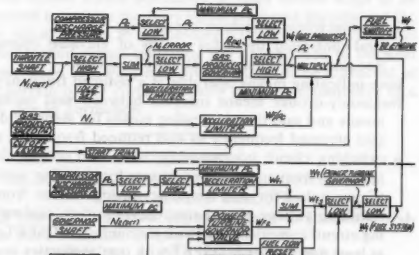
1. For use in a track press of the type adapted to receive a track chain having pins and bushings and present the chain to a movable tool head for removing or inserting the pins and bushings during disassembly or assembly, a multi-pitch tool bar adapted to be mounted on said head for receiving pin and bushing tool holding bolts whereby the pin and bushing tools are positioned to engage the chain pins and bushings, said bar including means for receiving a tool bar mounting bolt for securing the bar to the tool head at at least two heights, a plurality of pairs of spaced threaded holes for receiving the pin and bushing tool holding bolts formed in said tool bar, each pair of spaced threaded holes having a centerline, and at least two pairs of threaded holes disposed on different parallel spaced centerlines whereby the height of the tools as well as the pitch can be selected.

3,939,649

FUEL CONTROL

Ralph P. McCabe, Forest Park, Ohio, assignor to Chandler Evans Inc., West Hartford, Conn.

Division of Ser. No. 111,294, Feb. 1, 1971, Pat. No. 3,712,055.
This application Nov. 8, 1972, Ser. No. 304,622
Int. Cl.² F02C 9/08
U.S. Cl. 60—39.28 R 3 Claims



1. In a fuel control for a gas turbine engine with a gas producer and a power turbine, a power turbine governor comprising:

an inlet for receiving fuel from a gas producer control;

an outlet for delivering fuel to the engine;

conduit means to fluidly interconnect the inlet and the outlet for providing a path for fuel flow;

sensor means to generate an actual speed signal representative of the speed of the power turbine;

speed setting means to generate a set speed signal for the power turbine;

governor valve means responsive to the actual speed signal and the set speed signal to meter fuel flow in the conduit means;

overspeed valve means responsive to the actual speed signal to present a restriction to fuel flow in the conduit means upstream of the governor valve means when an overspeed condition of the power turbine arises; and

regulator means to maintain a substantially constant differential pressure between locations in the conduit means upstream of the overspeed valve means and downstream of the governor valve means by bypassing fuel, the overspeed valve means not presenting a substantial restriction to fuel flow until an overspeed condition arises, whereby the regulator means maintains a substantially constant differential pressure across the governor valve means during normal operation and governing and whereby the overspeed valve means causes the regulator means to bypass more fuel when an overspeed condition arises to thereby reduce fuel flow to the governor valve means.

3,939,650

OPERATIONAL CIRCUITRY FOR USE IN A GAS TURBINE ENGINE CONTROL SYSTEM

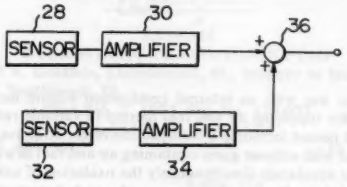
Takane Itoh, Yokohama, and Takao Kamide, Zushi, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 26, 1974, Ser. No. 527,372

Claims priority, application Japan, Nov. 28, 1973, 48-132560

Int. Cl.² F02C *9/08*

U.S. Cl. 60—39.28 T **1 Claim**



1. An operational electronic circuitry for use in a gas turbine engine control system for modifying a first signal into a second signal with respect to an actual ambient temperature, said first signal representing an optimum gas temperature at an inlet of a compressor turbine under a condition of a standard average engine ambient temperature, comprising:

first means for receiving said first signal to amplify it by a factor of $273/T_{ad}$ and to generate a signal according to the amplification, where T_{ad} is a standard average ambient temperature in degrees absolute;

second means for sensing said actual ambient temperature to generate a signal representing it in degrees absolute;

third means for receiving said signal from said second means to amplify it by a factor of T_{2sm}/T_{ad} and to generate a signal in proportion thereto, where T_{2sm} is a median of values of said first signal; and

fourth means for summing said signals from said first and third means to develop said second signal.

3,939,651

MOUNTING FOR ATTACHING A TUBULAR MEMBER IN CO-AXIAL REGISTRATION WITH AN APERTURE IN A WALL

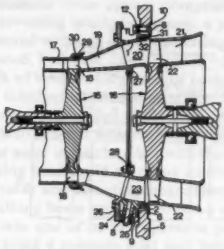
Robert Noel Penny, Solihull, England, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 25, 1974, Ser. No. 491,801

Claims priority, application United Kingdom, Aug. 8, 1973, 37658/73

Int. Cl.² F02C *7/20*

U.S. Cl. 60—39.32 **7 Claims**



1. A gas turbine engine including a turbine, ducting positioned upstream and downstream of said turbine and defining a working fluid passage through said turbine, the ducting including a tubular nozzle shroud member, supporting structure for said shroud member, said shroud member having at one end thereof a spigot which is to be fitted into an aperture in said supporting structure, and a mounting supporting the tubular nozzle shroud member in co-axial registration with the aperture in said supporting structure, said mounting comprising said spigot, which is of complementary shape to said aperture, a plurality of radially outwardly extending lugs spaced apart around the periphery of said spigot, and the supporting structure having a corresponding number of notches spaced apart around the periphery of the aperture, said lugs when aligned with the notches being insertable through said notches by axial movement of said tubular member and retained, in the manner of a bayonet-type of coupling, by portions of said supporting structure between said notches when said tubular member has been partly turned abouts its longitudinal axis, said tubular member also having a flange spaced axially from said lugs and sealingly engageable with said supporting structure when said lugs are located behind said portions between said notches, said lugs and said flange together holding said tubular member from axial movement with respect to said supporting structure, said supporting structure and said flange each having a pin-receiving opening therein, said openings being so positioned in said supporting structure and said flange respectively that when said tubular member has been turned to said retained position said openings are in registration one with the other, a removable locking pin insertable in said registered openings to prevent turning of said tubular member from said retained position, one of said openings being elongate in a direction radially of the longitudinal axis of said tubular member to permit limited relative movement between said tubular member and said supporting structure.

3,939,652

DEVICE COMPRISING AN EXPANSION ENGINE AND A SEPARATE APPARATUS FOR FEEDING SAID ENGINE

Cornelis Hubers, van Ostadelaan 2, Rozenburg, Netherlands

Continuation of Ser. No. 193,636, Oct. 29, 1971, abandoned. This application Jan. 11, 1974, Ser. No. 432,670

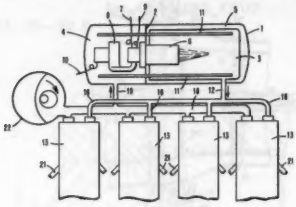
Claims priority, application Netherlands, Oct. 29, 1970, 70/15852

Int. Cl.² F02G *3/02*

U.S. Cl. 60—39.63 **6 Claims**

1. A device comprising an expansion engine, having at least one cylinder provided with at least one scavenge port and with

a piston moving therein, a separate apparatus for feeding said expansion engine with combustion gases under pressure, said separate apparatus comprising a housing with a heat insulating liner, said housing being subdivided into a first and a second chamber by means of a partition, at least one burner being mounted in said partition to receive all air from said first chamber and, and in such a way that the combustion takes place in the second chamber, said first chamber being connected by a conduit to the cylinder of said expansion engine for supplying air under pressure by said expansion engine to



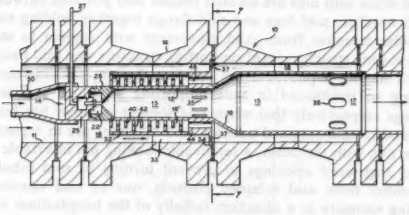
said first chamber, a non return valve being provided in said conduit which opens due to the compression of the air during the return stroke of the piston, said first chamber acting as the only source of supply of air under pressure for said burner, means for controlling a continuous supply of fuel and air to said burner in such amounts that a substantially complete combustion of said fuel in said second chamber is obtained, said second chamber being connected by a conduit to the cylinder of the expansion engine, a controlled valve being provided in said conduit for supplying combustion gases to the cylinder of said expansion engine.

3,939,653

GAS TURBINE COMBUSTORS AND METHOD OF OPERATION

Robert M. Schirmer, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 29, 1974, Ser. No. 456,180
Int. Cl.² F02C 3/00
U.S. Cl. 60—39.65 **15 Claims**



1. A combustor comprising, in combination:

an outer casing;

a flame tube disposed within said casing and spaced apart therefrom to form a first annular chamber between said flame tube and said casing;

an air inlet means for introducing a first stream of air into the upstream end portion of said flame tube;

a fuel inlet means for introducing fuel into the upstream end portion of said flame tube;

an imperforate sleeve surrounding an upstream portion of said flame tube and spaced apart therefrom to longitudinally enclose an upstream portion of said first annular chamber and define a second annular chamber between said sleeve and said outer casing;

means for supporting said sleeve in said spaced apart position from said flame tube;

a wall member secured to said outer casing and substantially closing the downstream end of said second annular chamber;

at least one opening provided in the wall of said flame tube at a first station located intermediate the upstream and downstream ends thereof;

first conduit means extending from said second annular chamber into communication with said opening located at said first station for admitting a second stream of air from said second annular chamber into the interior of said flame tube;

at least one other opening provided in the wall of said flame tube at a second station located downstream from said first station for admitting a third stream of air from said first annular chamber into the interior of said flame tube; and

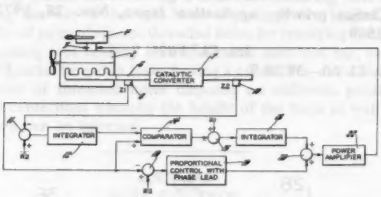
at least one opening provided in said wall member for providing communication between said second annular chamber and the portion of said first annular chamber downstream therefrom.

3,939,654

ENGINE WITH DUAL SENSOR CLOSED LOOP FUEL CONTROL

Wendell D. Creps, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1975, Ser. No. 548,969
Int. Cl.² F02B 75/10
U.S. Cl. 60—276 **6 Claims**



1. For use with an internal combustion engine including means for supplying air and fuel thereto in variable ratio and exhaust means including a catalytic converter effective, when supplied with exhaust gases containing air and fuel in a certain ratio, to accelerate simultaneously the oxidation of unburned fuel and the reduction of nitrogen oxides and characterized by time delay effects when the content of the gas introduced therein is varied, apparatus for controlling the ratio of air and fuel in said exhaust system to said certain ratio, said apparatus comprising:

means for generating a first signal indicative of the air-fuel ratio within said exhaust means upstream from said catalytic converter, said first signal generating means being characterized by time-related drift in closed cycle control operation;

means for generating a second signal indicative of the air-fuel ratio within said exhaust means downstream from said catalytic converter, said second signal generating means being characterized by catalytic converter-related, time-delayed response in relation to said first signal generating means; and

means for continually adjusting said fuel and air supply means to vary the ratio of fuel and air supplied to said engine in response to the direction of the deviation of said first signal from the time integral of the extent the second signal deviates from a fixed reference, said adjustment being in sense to reduce the deviation of the ratio of fuel and air in the exhaust means from said certain ratio.

3,939,655
ROTARY PISTON FOUR-STROKE INTERNAL COMBUSTION ENGINE

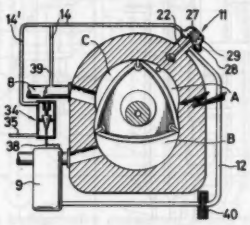
Max Ruf, Obereisesheim, and Johannes Steinwart, Bad Friedrichshall II, both of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft and Wankel GmbH, both of, Germany

Filed Oct. 17, 1974, Ser. No. 515,645

Claims priority, application Germany, Oct. 19, 1973, 2352482

Int. Cl.² F02B 75/10

U.S. Cl. 60—286 **9 Claims**



1. A rotary piston four-stroke internal combustion engine of the trochoid type having a housing composed of a shell and two parallel end parts together bounding an inner chamber, a polygonal piston being rotatably arranged in the chamber, inlet and outlet passages being provided in the housing, respectively, for supply of air or fresh gas and for ejection of burned gases, the inlet passage being connected with an intake duct and the output passage with an exhaust gas reactor, a line leading from the region of the inner chamber where compression is taking place to the exhaust gas reactor, a valve being arranged in said line, the valve being controlled by the negative pressure in the intake duct in such a way that the line is cleared above a certain negative pressure and shut off below that value.

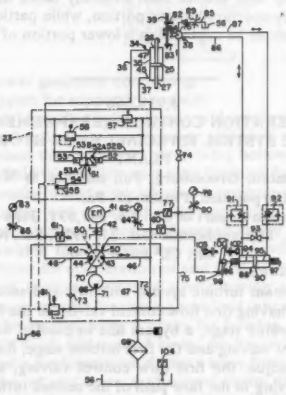
3,939,656
HYDROSTATIC TRANSMISSION PUMP

Harold A. Goldfein, Lincolnwood, Ill., assignor to Inca Inks, Inc., Northbrook, Ill.

Filed Feb. 2, 1973, Ser. No. 329,027

Int. Cl.² F15B 9/04, 21/04

U.S. Cl. 60—381 **10 Claims**



1. In combination with a well pumping apparatus having, a walking beam pivotally supported for rocking movement and adapted to have a polish rod connected to one end thereof and counterweights to its opposite end, double-acting hydraulic cylinder means operatively connected with said walking beam for imparting rocking movement thereto, and reversing control means operatively associated with said walking beam for sensing the movement of said beam and controlling the action of said double-acting cylinder means in driving said walking beam: a substantially closed circuit hydrostatic drive system operatively connected in driving relationsip with said double-acting hydraulic cylinder means and operatively connected with said reversing control means for control thereby, said circuit hydrostatic drive system comprising, a variable displacement reversing swashplate pump, a prime mover operatively connected with said pump for driving the same at predetermined speed, hydraulic circuit means operatively interconnecting each of two discharge/return ports of said pump with one of two inlet/outlet ports of said double-acting hydraulic cylinder means, and means operatively interconnecting said reversing control means with the swashplate of said pump for reversing the same in synchronism with the rocking movement of said walking beam, said reversing control means including a four-way valve and actuating means therefor whereby each time said walking beam rocks up or down said four-way valve is actuated into one of its two operative positions, said four-way valve having a pressure inlet port interconnected with a pressure discharge connection of a make-up pump supplying fluid under pressure to said variable displacement reversing swashplate pump, an outlet port, and a pair of discharge/-return ports, and said four-way valve in one of its operative positions having one of said discharge/return ports in communication with said inlet port with the other discharge/return port in communication with said outlet port and in the other of its operative positions having said one of its discharge/-return ports in communication with said discharge port and having said other discharge/return port in communication with said inlet port, and wherein said means operatively interconnecting said reversing control means with the swashplate of said pump comprises a second double-acting cylinder means having two inlet/outlet ports each of which is interconnected with one of said discharge/return ports of said four-way valve whereby said second double-acting cylinder means is actuated in one direction when said four-way valve is in one of its operative positions, and linkage means operatively interconnecting said second double-acting cylinder means with said swashplate.

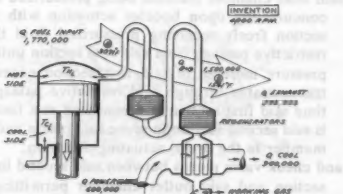
3,939,657
MULTIPLE REGENERATORS

Norman D. Postma, Northville, and David W. Barton, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 5, 1974, Ser. No. 503,588

Int. Cl.² F02G 1/04

U.S. Cl. 60—526 **8 Claims**



1. In a hot gas engine having at least one high temperature space and at least one low temperature space, a high pressure gas in said spaces, and means for reciprocally displacing said high pressurized gas between said spaces, apparatus for transferring heat to said high pressure gas and for isolating the heat

content thereof to one zone of displacement of said gas, comprising:

a. heat source means effective to generate a heated medium within a first location, and

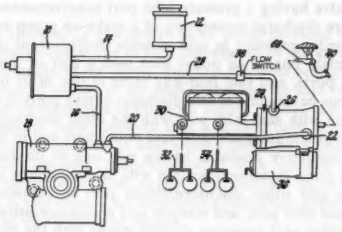
b. means defining heat conductive passages interconnecting said spaces and through which said high pressurized gas passes for displacement, said passage means having at least first and second heat accumulators disposed in a series therein with portions of said passages which are particularly disposed between said accumulators and portions which are disposed in advance of the first accumulator, said portions being directed through said first location for exposure to said heated medium.

3,939,658

POWER BRAKE BOOSTER

Robert A. Horvath, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1974, Ser. No. 516,155
Int. Cl.² B60T 13/12
U.S. Cl. 60—548 3 Claims



1. A hydraulic brake booster comprising:

a housing;

a power piston reciprocably received in said housing and defining therewith

first and second inlet chamber sections, said first section being operatively fluid connected to a source of hydraulic fluid pressure, said second section being in restrictive flow communication with said first section through a restrictive passage,

and an outlet chamber on the other side of said piston from said inlet chamber sections;

an input member;

valve means controlled by said input member for establishing a hydraulic pressure differential across said piston to actuate the booster;

an output member connected to said piston for transmitting forces between said booster and a brake master cylinder assembly;

said inlet chamber sections being pressurized substantially concurrently upon booster actuation with said second section freely receiving pressurized fluid through said restrictive passage from said first section until the rate of pressure increase in said first section exceeds the rate transmittable through said restrictive passage, at which time said first section is pressurized at a faster rate than is said second section to move said piston and said output member in the brake actuating direction;

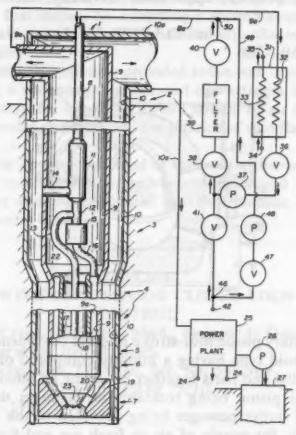
and check valve means between said second inlet chamber section and said outlet chamber permitting fluid flow from said outlet chamber to said second inlet chamber section when said piston is moved by pressure only in said first inlet chamber section, due to a high rate of pressure increase therein, and the consequent increase in volume of said second inlet chamber section at a rate faster than fluid can be supplied thereto through said restrictive passage, thereby preventing a vacuum block or retardation effect.

3,939,659

GEOTHERMAL ENERGY SYSTEM FLUID FILTER AND CONTROL APPARATUS

Hugh B. Matthews, Acton, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 10, 1974, Ser. No. 487,109
Int. Cl.² F03G 7/02
U.S. Cl. 60—641 9 Claims



1. In geothermal deep well pump apparatus located at a subterranean source of geothermal well fluid and of the kind including deep well pump means for pumping said geothermal well fluid always in liquid state for flow in cooperative energy exchanging relation with respect to a second fluid toward the earth's surface:

conduit means for conveying said second fluid from a station adjacent the earth's surface at a first pressure above the pressure of said geothermal well fluid,

heat exchanger means responsive to said geothermal well fluid for converting said second fluid into a working fluid, said deep well pump means utilizing said working fluid for pumping said geothermal well fluid, and

filter means normally in series flow relation with said conduit means and said heat exchanger means including cavity means having a multiply-apertured upper portion, whereby said second fluid normally flows through said multiply-apertured upper portion, while particulate matter tends to be captured in a lower portion of said cavity means.

3,939,660

ACCELERATION CONTROL ARRANGEMENT FOR TURBINE SYSTEM, ESPECIALLY FOR HTGR POWER PLANT

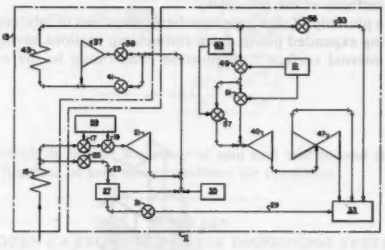
Ola J. Aanstad, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 367,991, June 7, 1973, abandoned. This application Oct. 31, 1974, Ser. No. 519,703
Int. Cl.² F01K 9/00
U.S. Cl. 60—661 31 Claims

1. In a steam turbine system with first and second turbine stages and having first flow control valving in the flow path of the first turbine stage, a bypass line in parallel with the first flow control valving and the first turbine stage, first actuating means to adjust the first flow control valving, second flow control valving in the flow path of the second turbine stage, a bypass line in parallel with the second turbine stage and the second flow control valving, a second actuating means to adjust the second flow control valving, and an auxiliary steam turbine means connected in the flow path between the exhaust

of the first turbine stage and the inlet of the second flow control valving, the exhaust pressure of said auxiliary steam turbine means causing an elevated steam pressure at the inlet of the second flow control valving at least during acceleration of the turbine system, an improved acceleration control arrangement for bringing the turbine system to operating speed comprising:

second flow control valving connected to govern a flow of steam through the second turbine stage,



a start-up bypass valve connected across the second flow control valving; and

third actuating means to open said bypass valve upon latching of the turbine system and to close said bypass valve upon initial loading of the turbine system, the second actuating means not opening the second flow control valving until initial loading of the turbine system is begun.

3,939,661

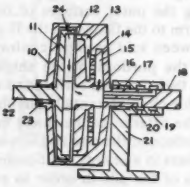
POWER GENERATOR

Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042

Continuation-in-part of Ser. No. 386,273, Aug. 7, 1973, Pat. No. 3,879,152. This application Aug. 27, 1974, Ser. No. 501,064

Int. Cl.[2] F01K *27/00*

U.S. Cl. 60—682 6 Claims



1. A power generator comprising:

a. a support for supporting a shaft;

b. a shaft journalled in bearings in said support for rotation;

c. a rotating first rotor mounted on said shaft so as to rotate in unison therewith; said rotor being hollow for circulating a fluid therewithin; said rotor having a first cavity near the center of said rotor adapted for passing said fluid and connected with a second cavity extending outward from the center of said rotor; said second cavity having vanes therewithin for assuring that said fluid will rotate with said rotor for acceleration of said fluid for pressurization of said fluid; said second cavity having a plurality of discharge nozzles for passing said fluid into a third cavity, said third cavity being a cavity for forming a free vortex by said fluid; said second cavity discharge nozzles being located a predetermined distance away from the center of rotation of said rotor; said second cavity discharge nozzles being sized and shaped to obtain highest attainable exit velocity for said fluid from said nozzles for the pressure differential available between entry and exit ends of said discharge nozzles; said second cavity discharge nozzles being oriented to discharge said fluid in nearly tangentially forward direction that is in the direction of rotation of said first rotor; said fluid being pressurized within said third cavity by being forced to follow a curved path formed by said third cavity, with the highest fluid pressure existing at the radial distance furthest away from the center of rotation of said rotor; said fluid being then passed to exit nozzles from said third cavity with said exit nozzles being located near the periphery of said third cavity and with said exit nozzles being oriented to discharge said fluid in forward direction that is in the direction of rotation; said fluid being at a higher pressure at the entry to said third cavity exit nozzles than at the entry to said first cavity;

d. a second rotor for generating power and being rotatably mounted and supported by a shaft and bearings; said second rotor cavity at periphery being adjacent to said first rotor third cavity exit nozzles for receiving said fluid; said fluid being passed inward toward the center of rotation via inward extending fluid passageways with said inward extending fluid passageways being provided with vanes for assuring that said fluid will rotate with said second rotor and for recovery of the work associated with the deceleration of said fluid; said second rotor being sealed with said first rotor for retention of pressure of said fluid; said fluid being discharged from said second rotor near the rotor center with said fluid being passed into said first rotor first cavity;

e. a means for adding heat to said fluid.

3,939,662

LIQUID IMPERVIOUS SURFACE STRUCTURES

Herbert A. Volz, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 12, 1973, Ser. No. 426,675

Int. Cl.[2] E02D *3/00;* C09J *3/04;* E02B *5/02*

U.S. Cl. 61—1 R 19 Claims

1. A liquid-impervious surface structure comprising an earthen foundation covered with a fabric wherein said fabric and a portion of said earthen foundation are permeated with an aqueous gel formed from a water-soluble polymer.

3,939,663

OIL FENCE HAVING DIRECTIONAL CONTROL DEVICE

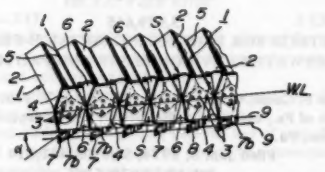
Toshiyata Tezuka; Hiroshi Kawakami, both of Kamakura, and Katsutoshi Miura, Yokohama, all of Japan, assignors to Bridgestone Tire Company, Ltd., Tokyo, Japan

Filed Sept. 27, 1974, Ser. No. 509,888

Claims priority, application Japan, Sept. 28, 1973, 48-112300[U]

Int. Cl.[2] E02B *15/04*

U.S. Cl. 61—1 F 4 Claims



1. A floating oil fence for collecting floating pollutants from the water surface comprising:

a plurality of vertical skirt members, each of said members separating in proximity to the water surface;

a flexible membrane attached to said vertical skirt members and connecting them in a water tight manner;

a float associated with each of said vertical skirt members to float said skirt members on the water surface;

directional control means including rudder plates at a suitable angle to a plane of said vertical skirt and substantially perpendicular to the water surface, said control means being arranged on a portion of said vertical skirt under said water surface; and,

wherein said control means prevent said vertical skirt from being tilted by relative movement of the water caused by a towing of said oil fence or by the natural flow of said water, said control means thereby maintaining said fence in a longitudinal direction at a determined orientation.

3,939,664

LARGE DIAMETER TUBULAR PILES AND THE BEDDING THEREOF

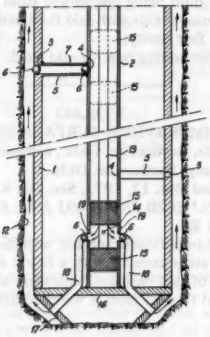
Georges Mazier, Avon; Jean Paul Geffriaud, Croissy-sur-Seine, and Daniel Gouvenot, Clichy, all of France, assignors to Solmarine S.A., Paris, France

Filed July 3, 1974, Ser. No. 485,705

Claims priority, application France, July 9, 1973, 73.25034

Int. Cl.² E02D *23/16, 5/22*

U.S. Cl. 61—53.58 **6 Claims**



1. A method of bedding a main tube of relatively large diameter in a borehole, comprising adding to the main tube to be bedded an auxiliary injection-tube of smaller diameter arranged in this main tube and which communicates with openings from the latter by means of sidepipes furnished with non-return valve means enabling the flow of an injection grout only from the auxiliary tube towards the main tube, and injecting grout into the borehole through said pipes and said openings by introducing into the auxiliary tube and injection-pipe having plugs which are arranged on opposite sides of a side pipe through which the grout is to flow.

3,939,665

METHOD FOR PROTECTING METAL H-PILING IN UNDERWATER ENVIRONMENTS AND PROTECTED H-PILING

Joseph F. Gosse, Coopersburg, and George V. Fehr, Nazareth, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jan. 8, 1974, Ser. No. 431,814

Int. Cl.² E02D *5/60*

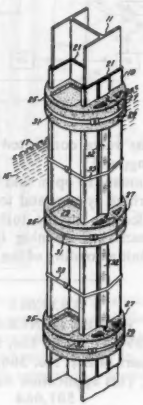
U.S. Cl. 61—54 **3 Claims**

1. An improved protective corrosion retarding shield assembly for protecting ferrous metal piling having a generally H-shaped cross-section from corrosion in submerged marine environments comprising:

a. a plurality of sheet-like plastic resin shield members having a contour conforming to the outer surface configuration of the H-piling for encompassing the surfaces of the pile in a circumferential close fitting layer of said shield members,

b. a viscous corrosion resistant material upon the inner surfaces of the shield members and adapted to be sandwiched between the plastic shield members and the surface of the pile to intimately engage the inner surfaces of the shield members and the outer surfaces of the pile, said viscous material serving to exclude passage of water between said pile and said shield members as long as said shield members are securely clamped against the external surfaces of the pile, and

c. a plurality of clamping members comprised of interengaging expanded plastic foam resin clamp sections having an internal surface configuration conforming to the outer



surface configuration of the shield members, said internal surface configuration including pairs of spaced grooves for receiving the outer surfaces of the shield members which conform to the flanges of the H-pile and an internal contour between said grooves conforming to the outer surfaces of the portions of the shield members which conform on their internal surfaces to the web portion of the H-pile, for circumferential clamping at spaced intervals about the exterior of the shield members assembled about the surface of the pile and serving to maintain said shield members in a sealing relationship against the exterior surfaces of the pile in order to exclude water from passage between said shield members and said pile surface.

3,939,666

STILE AND MULLION HEATER CONTROL

Larry Thomas Bashark, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

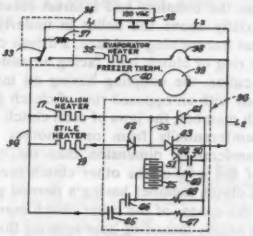
Filed Sept. 30, 1974, Ser. No. 510,485

Int. Cl.² F25D *21/08*

U.S. Cl. 62—150 **9 Claims**

1. In an apparatus having a cabinet with a refrigerated enclosure, and electrical heater means for preventing water condensation on the cabinet from ambient air surrounding the cabinet, control means for automatically controlling said heater means as a function of a condition of said ambient air, said control means comprising: power circuit means for providing electrical power to said heater means, said power circuit means providing a preselected full power to said heater means in a first state and a preselected partial power to said heater means in a second state; means for sensing said condi-

tion of the ambient air; and circuit means responsive to said sensing means for placing said power circuit means at all times



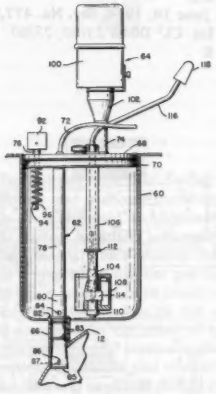
selectively in one or the other of said first and second states as a function of said sensed ambient air condition.

3,939,667

FROZEN CARBONATED DRINK DISPENSING SYSTEM

Maynard L. Halverson, Seattle, Wash., assignor to Sweden Freezer Manufacturing Co., Seattle, Wash.

Filed Sept. 9, 1968, Ser. No. 758,393
Int. Cl.² A23G 9/20
U.S. Cl. 62—188 **7 Claims**



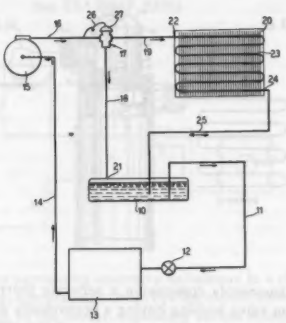
1. A frozen carbonated drink dispensing apparatus which comprises product freezing and dispensing means comprising a freezing cylinder pressure vessel and a frozen product dispensing valve communicating with said cylinder; and liquid mix supply means comprising a carbonated liquid mix reservoir pressure vessel, a mix entry tube extending between said reservoir and said freezing cylinder; means enabling said reservoir to be pressurized with CO_2 to a predetermined pressure level, a carbonated liquid mix valve in said tube communicating with said reservoir and with said cylinder for feeding liquid product under pressure from said reservoir into said cylinder according to the quantity of water and syrup in said freezing cylinder, and a carbonated water and syrup dispensing assembly communicating with said reservoir for charging said reservoir with proportioned quantities of carbonated water and syrup, said mix valve comprising a tubular valve sleeve removably positioned in said tube and opening into said freezing cylinder and communicating with the reservoir interior through a metering port, and a screened frozen product barrier removably fitted to the lower end of said sleeve to inhibit entry of frozen slush into said reservoir.

3,939,668

BALANCED LIQUID LEVEL HEAD PRESSURE CONTROL SYSTEMS

Herman H. Morris, P.O. Box 3129, Chattanooga, Tenn. 37404

Filed Nov. 21, 1974, Ser. No. 525,937
Int. Cl.² F25B 41/00
U.S. Cl. 62—196 **2 Claims**



1. A method of maintaining balanced liquid level in a refrigerant condenser system, comprising the steps of driving refrigerant through a closed circuit in the form of a stream,

at a first point in the stream compressing refrigerant vapor to a pressure;

at a second point directing the compressed vapor to a liquid receiver when the pressure is low, to a vapor condenser when the pressure is high, and proportionately to the liquid receiver and the condenser when the pressure is intermediate, as a function of the pressure;

at a third point directing liquid to the condenser from the liquid receiver in a reversed flow when the pressure is low; and

at a fourth point directing liquid to an expansion valve and through an evaporator and back to the said first point,

thereby to operate said condenser at optimum capacity when ambient conditions give said condenser system an excess capacity, through control of said liquid level in said condenser.

3,939,669

COMBINATION LIQUID TRAPPING SUCTION ACCUMULATOR AND EVAPORATOR PRESSURE REGULATOR DEVICE INCLUDING A DRIER AND THERMOSTATIC EXPANSION VALVE

Ernest W. Schumacher, Portsmouth, Va., assignor to Virginia Chemicals Inc., Portsmouth, Va.

Division of Ser. No. 388,281, Aug. 14, 1973, Pat. No. 3,858,407. This application Oct. 30, 1974, Ser. No. 519,305
Int. Cl.² F25B 49/00
U.S. Cl. 62—217 **2 Claims**

1. A liquid trapping suction accumulator adapted for insertion in a vapor-compression regrigeration system between the evaporator and compressor, comprising:

A. an accumulator chamber defined by a casing vertically extending and having a top and a bottom;

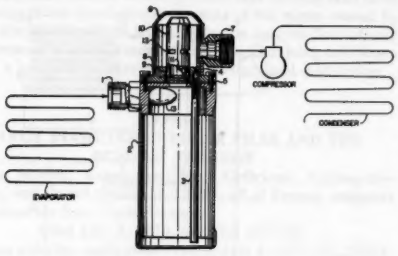
B. inlet and outlet ports opening into the top of said chamber and respectively adapted for operative connection to said evaporator and said compressor;

C. an evaporator pressure regulator chamber interposed between said inlet and outlet ports in communication with said accumulator chamber, said chamber including:

i. a pressure responsive evaporator pressure regulator device, vertically positioned in said evaporator pressure chamber proximate said outlet port, so as to gauge admission of vapor through said evaporator pressure regulator chamber and said outlet;

D. an eductor tube vertically extending independently from the bottom of said accumulator into said evaporator pressure regulator chamber whereby the pressure drop from said accumulator to said chamber controls both said regulator device and oil eduction;

E. a drier and thermostatic expansion valve subassembly for gauging liquid flow from said drier to said evaporator said



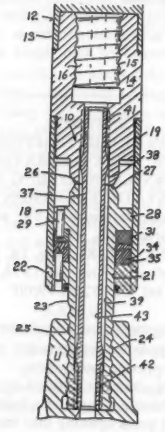
subassembly comprising a separate thermostatic expansion valve housing having a horizontally disposed exit for refrigerant to said evaporator and including a threadably removable filter drier casing vertically suspended from said valve housing and in flow communication between said entrance and said thermostatic expansion valve within said subassembly.

3,939,670

ROTATABLE DRILL STRING HAVING A TORSIONALLY ELASTIC SHAFT DRIVING CONNECTION WITH ROCK BIT

Lester A. Amtsberg, Utica, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed June 12, 1974, Ser. No. 478,471
Int. Cl.² F16D 3/14
U.S. Cl. 64—27 B **2 Claims**



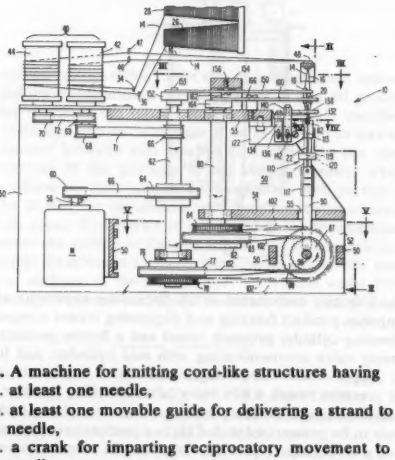
1. The combination comprising a continuously rotatable rock drill string having a drill pipe pilot section defining its forward end, a rock bit, and a unit for limiting excessive torque being imparted to the joints of the drill string drivingly connecting the pilot section with the rock bit; wherein the unit comprises an adapter section of drill pipe threadedly connected to the pilot section having an axially projecting thrust transmitting end face, a coupling threadedly connected to a lower end of the adapter section having an open upper end into which the thrust transmitting end face axially depends, a rock bit rod having a shank depending axially through a hole in a bottom end of the coupling carrying the rock bit at its bottom end, the shank having a collar about its upper end located within the coupling and a thrust receiving end face projecting axially above the collar in underlying abutment with the thrust transmitting end face, a driven clutch member defined by a ring of clutch jaws facing an annular undersurface of the collar, the coupling having an internal annular shoulder faced with an opposed ring of clutch jaws defining a driving clutch member, the jaws of each clutch member being spaced circumferentially from one another by spaces of greater circumferential dimension than the circumferential dimension of the jaws of the other clutch member, and the jaws of each clutch member having a normal position seated centrally of the spaces of the other clutch member, the rock bit having an axially extending bore opening through its thrust receiving end face aligned with an axially extending bore opening out of the thrust receiving end face of the adapter section, and a torsion shaft disposed in part in the bore of the adapter section and in part in the bore of the rock bit rod, wherein the shaft has at its upper end a splined driven connection with the adapter section and has at its lower end a splined driving connection with the rock bit rod.

3,939,671

MACHINE FOR KNITTING CORD-LIKE STRUCTURES

John B. Lawson, Providence, R.I., and Stephen C. Dangel, Cambridge, Mass., assignors to Lawson-Hemphill, Inc., Central Falls, R.I.

Filed June 10, 1974, Ser. No. 477,927
Int. Cl.² D04B 23/00, 27/00
U.S. Cl. 66—86 R **32 Claims**



1. A machine for knitting cord-like structures having

a. at least one needle,

b. at least one movable guide for delivering a strand to the needle,

c. a crank for imparting reciprocatory movement to the needle,

d. a timing pulley connective operatively to the crank to drive the crank,

e. a shaft for imparting strand delivery movement to the guide,

f. the crank and the shaft having axes disposed in directions transverse to each other,

g. a timing pulley connected to the shaft and

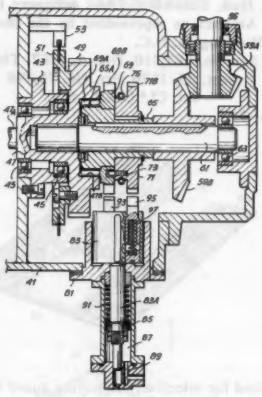
h. an endless twisted timing belt connecting the shaft pulley to the crank pulley for driving the needle crank to cause the needle to reciprocate in timed relation to the strand delivery movement of the guide.

3,939,672

CLUTCH DEVICE FOR KNITTING MACHINES

Giorgio Billi, Viale Torricelli 23, Florence, Italy

Filed July 30, 1973, Ser. No. 383,521
Int. Cl.[2] D04B 15/66, 9/00
U.S. Cl. 66—155 1 Claim



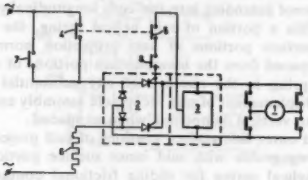
1. In a circular knitting machine having a continuously moving drive member and a driven member, a quick clutch means selectively coupling said continuously moving drive member and said driven member, said quick clutch means including a locking means which assures the locking of the driven member in a prescribed angular position upon disconnection from said drive member, said clutch means including a continuous circumferential surface on one of said members and a set of flats arranged on the other of said members to define with said circumferential surface a plurality of wedge spaces, a cage positioned between said circumferential surface and said set of flats and said cage including a plurality of roller elements confined in said wedge spaces to selectively couple said circumferential surface with said set of flats, said locking means being operatively engageable with said cage to selectively lock said driven member in a release position, and means responsive to disengagement of said locking means from said cage to couple the said circumferential surface with said set of flats, whereby said driven member is operatively connected to said drive member, said locking means including a first radially movable unit including a first rigid retaining tooth and a second radially movable unit including a second wedge-shaped spring-pressed retaining tooth, means for moving said rigid retaining tooth into engagement with one of a plurality of peripheral stops on the cage, and means for moving said wedge-shaped spring-pressed retaining tooth into engagement with one of a plurality of correspondingly shaped indentations on the periphery of said driven member, the configuration of said second spring-pressed wedge-shaped retaining tooth and the corresponding configuration of the indentations on the periphery of said driven member conforming with each other, thereby centering and correcting the stop position of the driven member upon engagement with said second retaining tooth.

3,939,673

DEVICE FOR PREVENTING UNBALANCE IN WASHING MACHINES DURING SPINDRYING

Yves Albert Daniel Thibaut, Amiens (Somme), France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1974, Ser. No. 450,726
Claims priority, application France, Mar. 15, 1973, 73.09350
Int. Cl.[2] D06F 33/02
U.S. Cl. 68—12 R 3 Claims



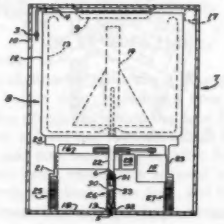
1. A device for preventing excessive imbalance in a clothes washing machine, comprising a drum driving motor, means for supplying voltage to the motor, regulating means sensitive to rotational speed of said motor for providing an output electrical control signal in response to said speed being below a predetermined speed, means for controlling voltage supplied by said supply means in response to an electrical control signal input, a water level switch contact for sensing a tub empty condition, an operating function controller contact for selecting a spin drying function, and means connecting said water level sensing contact and said operating function contact between the regulating means output and said voltage controlling means input such that voltage supplied to said motor will be controlled in response to said speed sensitive signal only when said spin drying function is selected and a tub empty condition is sensed.

3,939,674

SUSPENSION MOUNTING ASSEMBLY FOR AUTOMATIC WASHERS

James I. Czech, Lexington, Mass., and Roy C. Oakley, Jr., Coloma, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 325,983, Jan. 23, 1973, Pat. No. 3,854,308. This application Nov. 26, 1973, Ser. No. 419,128. The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.
Int. Cl.[2] D06F 37/24
U.S. Cl. 68—23.3 8 Claims



1. In an automatic wash machine having a cabinet, a cabinet base, and a rotatable receptacle assembly within said cabinet for spin drying laundry therein,

a suspension means for suspending said receptacle assembly within said cabinet and above said base,

said suspension means being formed by a plurality of vertically oriented spring assemblies each extending between

a pair of machine members composed of said receptacle assembly and said cabinet base,

each of said spring assemblies comprising,

a helical spring having a pair of opposed end regions,

an end member attached to each of said end regions,

each of said end members further being connected to a different one of said machine members,

said receptacle assembly suspended by the springs constituting a displaceable system subject to horizontal excursion during unbalanced rotatable spin drying,

one of said end members having a projection with a free end thereof extending into the coils longitudinally within a portion of said helical spring, the outer side surface portions of said projection normally being spaced from the inner surface portions of said helical spring in the absence of any substantial horizontal displacement of said receptacle assembly and affording no vertical dampening when so spaced,

said outer side surface portions of said projection being engageable with said inner surface portions of said helical spring for sliding frictional contact therebetween beginning adjacent said free end of said projection in response to substantial horizontal displacement of said receptacle assembly to oppose and dampen vertical forces acting on the receptacle assembly, and the degree to which vertical forces are opposed and dampened increasing proportionately as a function of the magnitude of such horizontal movement.

thereby to contribute to preventing the receptacle assembly from contacting the cabinet.

3,939,675

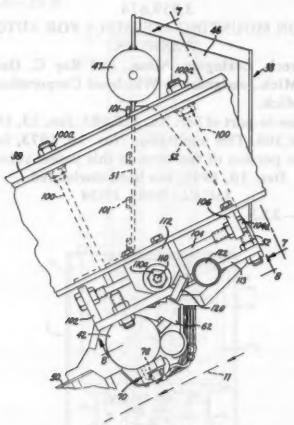
APPARATUS FOR DYEING AND PRINTING MATERIALS HAVING IMPROVED MEANS FOR SUPPORT THEREOF

Norman E. Klein, Inman, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed May 17, 1974, Ser. No. 471,109

Int. Cl.² D06B 1/02

U.S. Cl. 68—205 R **8 Claims**



1. In apparatus for applying dye to a moving material to print a pattern thereon including means for moving the material in a path of treatment, an elongate dye jet gun bar having a plurality of dye emitting jet orifices along the bar for directing dye in plural streams onto the material, a support frame for positioning the gun bar adjacent the path of material treatment, and means for attaching the gun bar to the support frame; the improvement wherein said attaching means comprises elongate resilient rod means at each end of said gun bar having one end attached to said gun bar and the other end attached to said support frame to supportingly suspend said gun bar on said support frame, and means operatively connecting said gun bar and said frame for applying multidirectional forces to said gun bar to bend said resilient elongate rod means and thereby adjustably position said gun bar relative to said support frame and said path of material treatment.

3,939,676

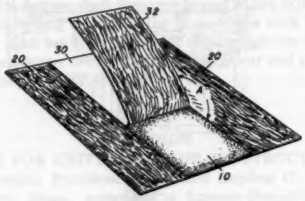
ADHESIVE GUARD HAIR REMOVAL

Nicholas D. Gallagher, Troy; Herbert N. Johnston, Columbus, both of Ohio; Robert J. Valihura, Lexington, Mass., and Henry E. Hull, Columbus, Ohio, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Division of Ser. No. 687,510, Dec. 4, 1967. This application Sept. 25, 1970, Ser. No. 75,398

Int. Cl.² C14B 15/00

U.S. Cl. 69—22 **10 Claims**



1. A method for selectively removing guard haid from animal pelts chosen from the group consisting of fur seal, beaver, otter, coney, muskrat and nutria which comprises:

pressing an adhesive coated substrate against the guard hair of said animal pelt, said adhesive comprising a polyvinyl acetate emulsion, and

pulling the substrate away from the pelt thereby removing guard hair from the pelt without substantial removal of fur which underlies the guard hair.

3,939,677

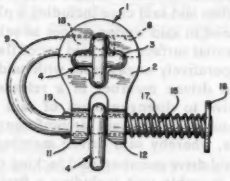
THEFT DETERRENT CHAIN LOCKING DEVICE

Walker E. Drayton, York, Pa., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.

Filed Apr. 23, 1973, Ser. No. 353,461

Int. Cl.² E05B 73/00

U.S. Cl. 70—14 **3 Claims**



1. An adjustable locking device comprising:

a. a chain;

b. a locking shackle having an extended arm portion;

c. an adjustment device including:

1. a first orifice extending therethrough for slidably receiving the chain and holding it against rotation,

2. a second orifice extending crosswise of the first orifice for receiving the shackle member in the path of axial movement of alternate links of the chain, and

3. spaced apertured flanges for receiving the end link of said chain therebetween and the extended arm of the shackle member therethrough; and

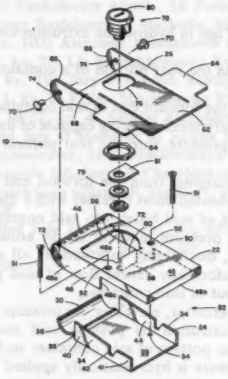
d. spring means mounted about the extended arm and urging the body member in one direction to normally position the shackle in the second orifice of said body member.

3,939,678

TELEPHONE LOCKING APPARATUS

Floyd M. Wagoner, Merrillville, Ind., assignor to New Product Development Corporation, Chicago, Ill.

Filed Jan. 6, 1975, Ser. No. 538,811
Int. Cl.² E05B 65/00
U.S. Cl. 70—57 10 Claims



1. An apparatus for locking a telephone, said telephone having a switch hook and a handhold shelf, comprising, in combination:

means for rigidly attaching said apparatus to said telephone, said attaching means including a base plate, a keeper plate, and means for adjustably securing said base plate to said keeper plate, said keeper plate having a pair of side walls, said side wall having a first end portion, an intermediate portion and a second end portion, said side wall having a height greatest at said first end portion and inclining downwardly from said first end portion to said intermediate portion, said first end portion engaging said base plate in an assembled state, said base plate, keeper plate and securing means cooperatively defining jaw means for adjustably clamping said handhold shelf, said keeper plate pivoting substantially about said engagement of said first end portion and said base plate as said securing means is adjusted;

a locking plate hingedly connected to said attaching means and operable in at least a first state, said locking plate engaging and depressing said switch hook in said first state; and

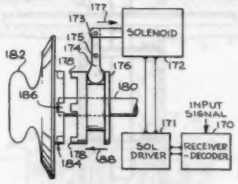
means for selectively interlocking said locking plate and said attaching means whenever said locking plate is in said first state, said interlocking means being fixedly secured to said locking plate, said attaching means substantially enclosing said interlocking means in said first state, whereby tampering with said interlocking means in said first state is substantially avoided.

3,939,679

SAFETY SYSTEM

James N. Barker, Ontario, and Edward A. Cartwright, Montclair, both of Calif., assignors to Precision Thin Film Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 371,378, June 19, 1973, abandoned. This application Mar. 18, 1974, Ser. No. 451,975
Int. Cl.² E05B 47/00; F41C 17/00; G08B 13/08
U.S. Cl. 70—277 10 Claims



1. In a safety system:

a. first operating means;

b. disabling means coupled to said operating means to prevent the operation thereof; and

c. enabling means including a first portion and a second portion;

said first portion being adapted for carrying upon the person of authorized personnel and including a source of signals having predetermined, distinctive characteristics;

said second portion including means coupled to said disabling means for effectively decoupling said disabling means from said operating means only in response to said signals having said predetermined, distinctive characteristics;

said enabling means also including distinct, self-contained first and second power supplies in said first and second portions thereof respectively, at least said second power supply containing a rechargeable power source, and means for transferring electrical energy from said first portion to said second portion for charging said rechargeable power source by an inductive coupling established when said two portions are adjacent one another in a predetermined juxtapositon.

3,939,680

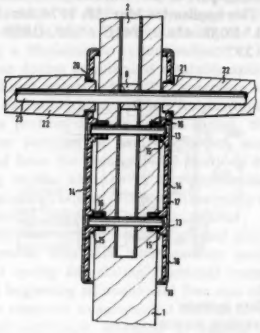
INSTALLATION FOR MOUNTING A DOOR PANEL OR ROSETTE ON A DOOR

Karl-Josef Heidkamp, Velbert, Germany, assignor to Otto Grosssteinbeck GmbH, Velbert, Germany

Filed May 1, 1973, Ser. No. 356,191
Claims priority, application Germany, May 9, 1972, 2222717
Int. Cl.² E05B 15/02
U.S. Cl. 70—452 15 Claims

1. In an installation for mounting a door panel on at least one side of a hollow door; including a door lock-containing receptacle being positioned within the door from the forward surface thereof; at least one fastener means for securing said door panel to said door and being invisible from exteriorly of said door panel being immovably secured in said door in a direction towards the plane of the door; and fastener connecting means cooperating with said fastener means for securing said door panel against axial movement, the improvement comprising: said fastener means including at least one fastening pin located in a breakthrough in said receptacle in a gripping engagement, the ends of said pin projecting outwardly of and normally to the two surfaces of the door; said door panel including an outer ornamental plate portion and an inner plastic material portion fixedly connected thereto positioned intermediate the surface of the door and said plate portion, projecting means integrally formed with said plastic material

portion and facing said pin, a bore formed in said projecting means in coaxial alignment with said pin, said pin having the



end proximate said projecting means inserted into said bore in interference fit for preventing axial movement therebetween and to fixedly mount said door panel on said door.

3,939,681

METHOD OF EXPLOSIVELY EXPANDING TUBES

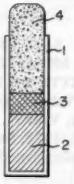
Hirohiko Yoshitomi; Junji Hashimoto; Taro Kodama, and Fujiharu Hirose, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 17, 1974, Ser. No. 480,297

Claims priority, application Japan, July 4, 1973, 48-74738; July 4, 1973, 48-74739; Nov. 16, 1973, 48-128156

Int. Cl.² B21D *26/02*

U.S. Cl. 72—56 11 Claims



1. A method of securing the tube ends of a plurality of explosively expandable metallic tubes to a tube plate in which said tubes are inserted, which comprises the steps of:

1. inserting a cartridge containing an explosive charge in each of the metallic tubes to be secured to the tube plate, there being heat sensitive means in operative proximity to each of said explosive charges, each of said heat sensitive means having an end portion projecting beyond the tube in which said cartridge is inserted; and
2. successively igniting said heat sensitive means thereby successively to explode said explosive charges and expand said expandable metallic tubes by applying heat energy to said heat sensitive means through heating means positioned adjacent said projectend portions to successively transfer heat energy to said heat sensitive means.

3,939,682

METHOD AND MACHINE FOR USE IN HYDROSTATIC EXTRUSION

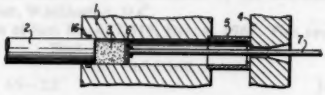
Masao Nishihara, Kyoto; Yoshihiro Yamaguchi, Ashiya; Tomiharu Matsushita, Nishinomiya; Tatsuo Yamasaki, Kobe; Masataka Nogushi, Nishinomiya, and Nishioka, Kunihiko, Kobe, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Filed Sept. 19, 1973, Ser. No. 398,861

Claims priority, application Japan, Sept. 19, 1972, 47-93997

Int. Cl.² B21C *33/00*

U.S. Cl. 72—60 5 Claims



1. A method of use in hydrostatic extrusion comprising the steps of:

sealing a stem in the rear portion of a container in a fluid-tight manner;

inserting, from the forward end of said container, a lump of viscous pressure medium being capable of hydrostatically transmitting pressure, into the rear portion of said container;

subsequently charging, from the forward end of said container, a pre-heated billet together with a die mounted at the front end of said billet into said container, thereby causing said pressure medium to fill around said pre-heated billet, discharging substantially all air from said container, before any excess flow of said pressure medium flows out of said container;

immediately thereafter, elevating the pressure required for hydrostatic extrusion by pushing said stem forwardly from said rear portion of said container such that homogeneous pressure is hydrostatically applied to said billet by means of said viscous pressure medium.

3,939,683

PIERCING TOOLS

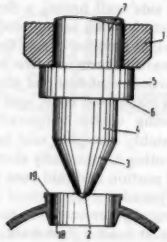
Johannes Adrianus van Geffen, Oratoriumstradt 9, Apeldoorn, Netherlands

Filed Dec. 19, 1974, Ser. No. 534,412

Claims priority, application Netherlands, Nov. 28, 1974, 7415559

Int. Cl.² B21D *28/36*

U.S. Cl. 72—71 5 Claims



1. A rapidly rotatable piercing tool of hard material for forming, substantially by frictional heat and pressure, a hole surrounded by a boss in a metal plate or the wall of a metal pipe, the active part of said tool for making the diameter of the hole to size having a leading portion extending to and tapering towards the free end of the tool, said active part of the tool having cross sectional areas, of each one of which the basic

shape is an equilateral triangle, each cross sectional shape consisting in and near each apex of said triangle of two arcs adjoining each other and touching the circumscribing circle of said triangle at the respective apex and of connecting lines interconnecting and blending with said arcs, the radii of curvature of said arcs being smaller than that of said circumscribing circle and the arcs which extend from the apices of the triangle in the direction of rotation of the piercing tool having a radius of curvature which is smaller than any radius of curvature of the arcs extending from said apices in the opposite direction.

3,939,684

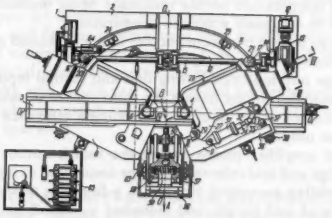
TWO-ROLL MACHINE FOR ROLLING-OUT DISC-TYPE ARTICLES

Alexei Kirillovich Ignatiev, Volgogradsky prospekt, 71, kv. 167; Nikolai Ivanovich Volodin, Pyatnitskaya ulitsa, 2, kv. 39; Mikhail Yankelevich Alshits, 16 Parkovaya ulitsa, 39, kv. 33; Evgeny Rozhdenevich Maskulia, M.Kaltnikovskaya ulitsa, 5, kv. 102; Alexandr Khaimovich Graifer, Lesnaya ulitsa, 8/12, kv. 29; Lia Menakhimovna Kurs, ulitsa Vorovskogo, 28, kv. 10; Jury Ivanovich Zelenov, Bolshevistsky pereulok, 11, kv. 6; Erlina Mavrikievna Rakhmanova, Zatsepsky val, 10/22, kv. 4; Nikolai Alexandrovich Cherchintsev, deceased, late of Moscow; by Nonna Alexeevna Krasilnikova, administrator, M.Kaltnikovskaya ulitsa, 5, kv. 72, and by Alexandr Nikolaevich Cherchintsev, administrator, Molodogvardeiskaya ulitsa, 28, korpus 1, kv. 67, all of Moscow, U.S.S.R.

Filed July 31, 1974, Ser. No. 493,734

Int. Cl.[2] B21H *5/00*

U.S. Cl. 72—86 **1 Claim**



1. A two-roll machine for rolling-out disc-type articles, comprising: a portal-type bed; circular guides fastened to said bed; two slide rests arranged on said circular guides rotatable about vertical shafts attached to said bed; rolling heads mounted each in one of said slide rests movable with respect to the corresponding slide rest; rolling rolls with a rotating gear with each roll being set up in one of said heads; a gear for turning the slide rests along the circular guides, said gear being installed on said bed; a gear for carrying said heads relative to said slide rests; a carriage with an article clamping gear, said carriage being movably mounted on said bed to introduce the article into the rolling zone and to withdraw it herefrom; a carriage transfer gear set up on the bed, and linked mechanically to said rest turning gear; drives for the above-mentioned gears.

3,939,685

MECHANISM FOR CENTERING METAL HOLLOW BODIES DURING A DRAWING OPERATION

Wilhelm Hortig, Auerbach, Germany, assignor to KM Engineering AG, Basel, Switzerland

Filed Sept. 16, 1974, Ser. No. 506,657

Claims priority, application Switzerland, Sept. 19, 1973, 13466/73

Int. Cl.[2] B21D *22/30*

U.S. Cl. 72—361 **6 Claims**

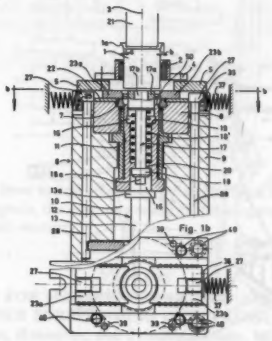


Fig. 1b

1. A mechanism for centering drawn metal hollow bodies in front of a die of an ironing tool where each metal hollow body has a flared section along the edge zone of its open face, said mechanism comprising:

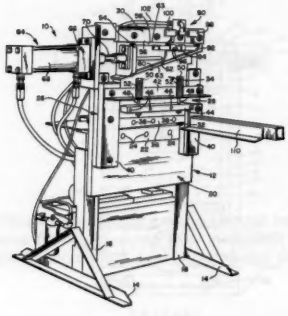
- **a. at least two centering-cheeks adapted to the circumference of the metal hollow body,**
- **b. said centering-cheeks being movably supported for sliding movement within a place extending transversely to the tool axis and in a direction toward and away from the tool axis,**
- **c. a crossbar disposed across the bottom of a housing for the die,**
- **d. a main ejector slidingly supported in the die housing,**
- **e. said main ejector including a freely slidable section disposed above the crossbar and a rod lying under resilient prestress,**
- **f. said rod being guided concentrically with the crossbar and including an area portion which, upon ejection motion of the rod, lies against said slidable section to cause said section to slide away in front of the rod,**
- **g. said crossbar having a central bore with a cross section which is greater than that of the top part of the rod but smaller than said area portion facing the crossbar of said slidable section, and**
- **h. mechanical control means for effecting periodic opening motion of said centering-cheeks in a direction away from the tool axis in dependence upon the motion of a draw punch,**
- **i. said control means being effective to cause the centering-cheeks to embrace the hollow body centeringly at at least a fraction of its overall height and after it has been thrust into the die by the draw punch,**
- **j. said control means including means for withdrawing said centering-cheeks away from the circumference of the hollow body at a time just before said flared section passes thereby and by an amount equal to at least the radial dimension of the flared section.**

3,939,686

WEDGE ACTUATED CUTTING AND/OR FORMING TOOLS

Andrew C. Walters, Dallas, and William M. Goss, Richardson, both of Tex., assignors to Fabco, Incorporated, Lewisville, Tex.

Division of Ser. No. 331,237, Feb. 9, 1973. This application July 15, 1974, Ser. No. 488,792
Int. Cl.[2] B21D 7/06
U.S. Cl. 72—441 3 Claims



1. A press brake comprising:

a generally vertically extending frame including a pair of vertically extending guide portions and a hydraulic fluid reservoir containing a substantial quantity of hydraulic fluid, whereby the hydraulic fluid reservoir and the hydraulic fluid therein tend to stabilize the press brake and tend to absorb vibrations caused by the operation thereof;

a fixed platen extending between the upper ends of the guide portions of the frame and supporting a first forming tool;

a movable platen slidably supported on the guide portions of the frame beneath the fixed platen and supporting a second forming tool;

a backup extending between the lower ends of the guide portions of the frame;

a wedge mounted between the backup and the movable platen for lateral reciprocation with respect thereto;

said wedge and backup including cooperating camming surfaces whereby the movable platen is reciprocated toward and away from the fixed platen in response to lateral reciprocation of the wedge;

said hydraulic fluid reservoir being positioned beneath the fixed platen, the movable platen, the backup and the wedge;

a hydraulic cylinder mounted on the frame and operatively connected to the wedge and having a predetermined maximum stroke;

switch means including portions mounted on the wedge for reciprocation therewith to effect reciprocation of the hydraulic cylinder through a stroke shorter than the predetermined maximum;

hydraulic pump means mounted on the frame for withdrawing hydraulic fluid from the hydraulic fluid reservoir and supplying pressurized hydraulic fluid; and

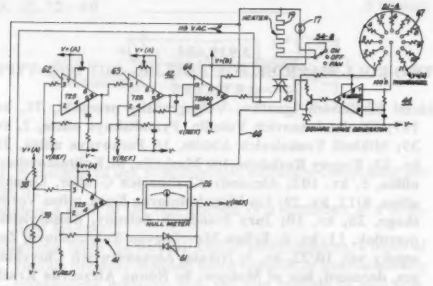
valve means for controlling the flow of pressurized hydraulic fluid from the hydraulic fluid pump means to the hydraulic cylinder and thereby selectively reciprocating the wedge and the movable platen.

3,939,687

TEMPERATURE CALIBRATION SYSTEM

Bradley C. Waldron, Canoga Park, Calif., assignor to King Nutronics Corporation, Woodland Hills, Calif.

Filed July 15, 1974, Ser. No. 488,586
Int. Cl.[2] G01K 15/00; G05F 11/16
U.S. Cl. 73—1 F 6 Claims



1. In an on-off zero crossing non-proportional control circuit for a system for providing an accurate temperature for calibration of a temperature probe, the system including a well with a heater, a heat sink having an opening for receiving a temperature probe, and a temperature sensing resistor, the combination of:

a bridge circuit with four legs and four corners, and having a temperature setting resistance in at least one leg and having said temperature sensing resistor in another leg, said temperature setting resistance being manually variable to designate a desired temperature;

a voltage source connected across first and second opposite corners of said bridge;

a bridge null indicator having first and second inputs;

first amplifier means having the third corner of said bridge connected as an input and providing a reference voltage as an output;

second amplifier means having the fourth corner of said bridge and said reference voltage connected as inputs and providing an output varying as a function of the difference of said inputs, and including an on-off circuit and threshold detector for switching the output between full on and full off;

switching means for connecting said heater to a power source;

means for connecting said second amplifier means output to said switching means in controlling relation;

means for connecting said reference voltage and said fourth corner to said indicator inputs with said indicator indicating a null when the well temperature is substantially at the desired temperature;

a pulse generator providing a pulse train output;

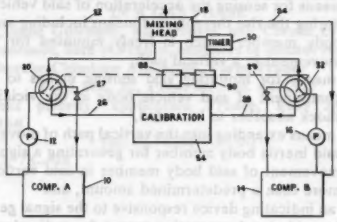
means for setting the pulse rate of said generator as a function of said desired temperature with a higher rate for a higher temperature; and

means for connecting said generator pulse train output to said second amplifier means for controlling said switching means and limiting the full on output when the well temperature is less than a predetermined amount less than the desired temperature so that said heater is energized during only a portion of each cycle of the pulse generator output.

3,939,688
VOLUMETRIC CALIBRATION

Dieter R. Misch, Tallmadge, and Otto A. Hulber, Barberton, both of Ohio, assignors to Edge Saw Manufacturing Company, Grand Rapids, Mich.

Filed Sept. 16, 1974, Ser. No. 506,356
Int. Cl.² G01F *25/00*
U.S. Cl. 73—3 **8 Claims**



1. A volumetric calibration device for measuring amounts of at least one moisture sensitive liquid material flowing in a liquid circulating system, said device comprising:

volumetric holding means;

measuring means on said holding means for ascertaining the amount of material being contained therein;

valve means in flow communication with said holding means and said liquid circulating system, said valve means being capable of selectively controlling the flow of liquid material to said holding means and from said liquid circulating system;

means for returning the liquid material from said holding means to said liquid circulating system; and

drive means in flow communication with said holding means for displacing the liquid material contained in said holding means to return said liquid material through said liquid material returning means to said liquid circulating system, said drive means including a moisture-free fluid material inert with respect to said one liquid material and means for selectively pressurizing said inert fluid material, and further comprising a solid movable separator in said volumetric holding means to separate said one liquid material from said inert fluid material;

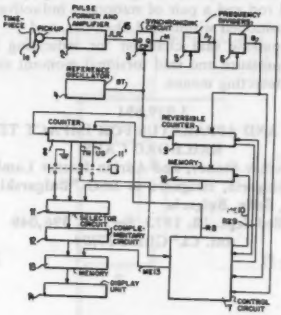
whereby said liquid can be supplied and returned to said circulating system without contamination or exposure to the operators.

3,939,689
METHOD AND APPARATUS FOR DISTINGUISHING APERIODIC NOISE INPUT SIGNALS FROM PERIODIC INPUT SIGNALS DURING MEASUREMENT

Pierre Desarzens, Bienne, Switzerland, assignor to Omega, Louis Brandt & Frere S.A., Bienne, Switzerland

Filed Sept. 29, 1972, Ser. No. 293,642
Claims priority, application Switzerland, Oct. 5, 1971, 14552/71
Int. Cl.² G04B *17/00*
U.S. Cl. 73—6 **6 Claims**

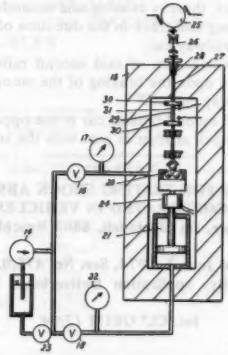
1. An apparatus for distinguishing aperiodic noise signals from period input signals comprising a pulse counter, a reference generator adapted to produce pulses at a constant reference frequency, an indicating unit adapted to indicate a measuring value, means for transmitting reference pulses from said generator to said pulse counter, a control circuit interconnected with said transmitting means and said pulse counter for controlling transmission and addition of reference pulses from said generator into said counter during a predetermined number of cycles of said input signals and for transmission and subtraction of reference pulses during an equal number of cycles of said input signals, and a memory for storing the results of the addition and subtraction of pulses in said counter, wherein said counter is controlled to add reference pulses during a half cycle of said input signals, to subsequently subtract reference pulses during a full cycle of said input signals, and then to add reference pulses during a half cycle of said input signals, the counting result of these operations being stored in said memory.



3,939,690
DEVICE FOR MEASURING FRICTION AND WEAR UNDER SURROUNDING HIGH PRESSURE

Eduard Kuss, Hannover, and Friedhelm Hotte, Misburg, both of Germany, assignors to Edward Kuss, Hannover, Germany

Filed Apr. 16, 1974, Ser. No. 461,327
Claims priority, application Germany, Apr. 18, 1973, 2319668
Int. Cl.² G01N *3/56, 19/02*
U.S. Cl. 73—9 **18 Claims**



1. A device for measuring friction and wear under coexisting surrounding high pressure, comprising:

a. a high-pressure autoclave including walls defining a chamber,

b. means for supporting at least one test element in said chamber,

c. a rotatably mounted drive shaft extending through a wall from the exterior to the interior of said chamber and arranged to rotate said support means in said chamber,

d. a pressure-tight seal between said drive shaft and said wall,

e. means for applying fluid pressure in said chamber,

f. means located in said chamber for exerting contact pressure in the form of a unidirectional load on said test element,

g. means located in said chamber for detecting the torsional moment applied to said test element and comprising a torsional rod extending between said drive shaft and said support means, a pair of magnetized discs spaced on said torsional rod and a pair of stationary inductive scanning heads positioned within said chamber, and

h. means outside said chamber for indicating both said contact pressure and said torsional moment as detected by said detecting means.

3,939,691

METHOD AND APPARATUS FOR IMPACT TESTING RAILROAD CARS

Tzvyatko Penchev Stanev, and Adrian Kostov Lambiev, both of Sofia, Bulgaria, assignors to DSO "Bulgarski Darjavni Jeleznitzi", Sofia, Bulgaria

Filed Sept. 10, 1973, Ser. No. 396,049

Int. Cl.² G01M *17/04*

U.S. Cl. 73—11 **13 Claims**

1. A method of impact-testing a railway car comprising the steps of:

entraining a first railway car along a stretch of track from an initial position with a drive rope displaced alongside said track;

intercepting the first railway car with a second railway car under impact, thereby causing said second railway car to rebound along said track in the direction of displacement of the first railway car;

braking the momentum of said second railway car while storing force upon the braking of the momentum of said second railway car; and

displacing said second railway car in the opposite direction along said track at least in part with the stored force.

3,939,692

ASSEMBLY FOR TESTING SHOCK ABSORBERS INCORPORATED IN VEHICLES

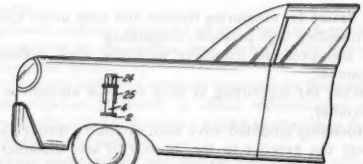
Alfred R. Bolliger, Im Sidefadeli, 8803 Ruschlikon, Switzerland

Filed June 3, 1974, Ser. No. 475,920

Claims priority, application Switzerland, Nov. 5, 1973, 15556/73

Int. Cl.² G01M *17/04*

U.S. Cl. 73—11 **6 Claims**



1. An assembly for testing a shock absorber associated with a wheel pair of a spring suspended vehicle having a vehicle body, said assembly comprising

a. a step to produce a drop motion of said wheel pair so that said vehicle body will rise in oscillation under the influence of springs but damped by a shock absorber after dropping motion thereof,

b. means for indicating the condition of a shock absorber of said wheel pair by evaluating the acceleration inherent in the rise of said vehicle body during the first oscillation and first oscillation only of said vehicle body after dropping motion thereof, said means comprising

i. means for sensing the acceleration of said vehicle body during the rise thereof, said means including an inertia body member which is freely mounted for vertical movement in a vertical path,

ii. means for mounting said sensing means to a body component of said vehicle body in the vicinity of a shock absorber to be tested,

iii. means extending into the vertical path of movement of said inertia body member for generating a signal upon movement of said body member in said vertical path more than a predetermined amount, and

iv. an indicating device responsive to the signal generated by said signal generating means for indicating movement more than said predetermined amount by said body member.

3,939,693

PROCESS AND APPARATUS FOR THE QUALITATIVE AND QUANTITATIVE ANALYSIS OF SOLID MATERIAL

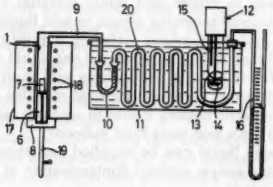
Philippe A. Dumont, Stokay St Georges, Belgium, assignor to Carrieres et Fours A Chaux Dumont-Wautier, Hermalle-sous-Huy, Belgium

Filed Apr. 18, 1974, Ser. No. 462,150

Claims priority, application United Kingdom, Apr. 26, 1973, 19786/73

Int. Cl.² G01N *7/16*

U.S. Cl. 73—19 **6 Claims**



1. Process for measuring qualitatively and quantitatively at least one volatile fraction contained in a solid, in which a sample of a given weight of the solid is introduced in a first enclosure having a known internal capacity, the sample is then brought up to a temperature at which said volatile fraction becomes gaseous in the first enclosure, the gasified volatile fraction is allowed to become distributed both in said first enclosure and in a second enclosure connected to the first enclosure by a capillary tube and having a higher internal capacity than the first enclosure, the second enclosure having previously been brought to a constant temperature having a known value which is higher than the temperature at which the gasified volatile fraction become liquid but lower than the temperature reached in the first enclosure, the pressure increase which occurs in the whole system due to the gasification of said volatile fraction is measured and gas state equations for said enclosures are solved.

3. Apparatus for measuring qualitatively and quantitatively at least one volatile fraction contained in a solid, comprising a furnace, a first enclosure or chamber of a given capacity in said furnace, adapted for receiving a sample of a given weight of the solid and having means for closing it in a tight manner, a second enclosure of chamber of a higher capacity than the first enclosure and connected to the first enclosure or chamber by means of a capillary tube, a device for maintaining in

the second enclosure or chamber a constant temperature which is lower than the temperature reached in the first enclosure, and means for measuring the pressure developed within the two enclosures or chambers.

3,939,694

METHOD AND APPARATUS FOR MEASURING THE CONCENTRATION OF SOLID PARTICLES SUSPENDED IN A GAS PHASE

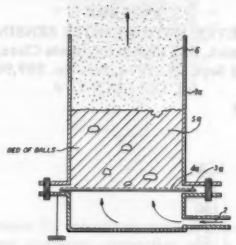
Jean-Claude Guichard, Ris-Orangis, and Claude Chauvelier, Ballancourt, both of France, assignors to Institut National de Recherche Chimique Appliquee, Paris, France

Filed Feb. 26, 1974, Ser. No. 445,927

Claims priority, application France, Feb. 28, 1973, 73.07160

Int. Cl.[2] G01N *33/00*

U.S. Cl. 73—28 6 Claims



1. A method for measuring the concentration of solid particles suspended in a gaseous phase comprising the steps of

fluidizing at least one bed of solid balls placed in a metallic container, with the balls having diameters and weights greater than those of the largest particles of said gaseous phase, by admitting at its bottom a stream of said gaseous phase;

recording a current of an intensity proportional to the weight concentration of the solid particles of said gaseous phase during separation of particles from the balls with a recorder connected through an amplifier circuit connected to the wall of said metallic container.

3,939,695

APPARATUS FOR DETECTING LEAKS

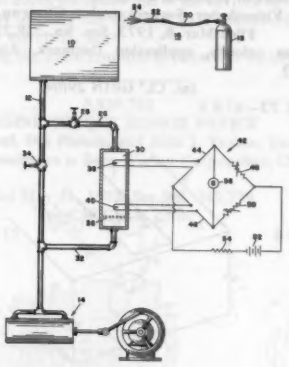
Eugene T. Booth, New York, N.Y., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 26, 1974, Ser. No. 12,455

Int. Cl.[2] G01M *3/04*

U.S. Cl. 73—40.7 3 Claims

1. A device adapted to be used in testing for leaks an apparatus that is being evacuated by a vacuum pump, comprising in combination, a conduit through which gases from said apparatus are drawn by said pump, a finely porous membrane mounted in said conduit to cause gases immediately upstream of said membrane to be enriched with respect to a heavy component of said gases, first thermal conductivity measuring means positioned close to the upstream side of said membrane in contact with said enriched gas, second thermal conductivity measuring means positioned in said conduit at a point sufficiently spaced upstream from said membrane that said second measuring means is in contact with unenriched gas from said apparatus, and indicating means operatively connected to said first and second thermal conductivity measuring means for



indicating the relation between said two measuring means as an indication of the presence of a leak in said apparatus.

3,939,696

SCANNING ULTRASONIC INSPECTION METHOD AND APPARATUS

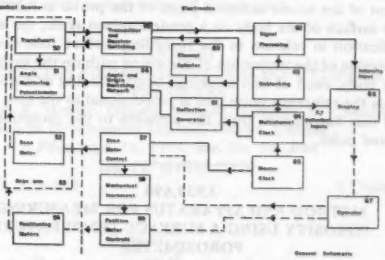
George Kossoff, Northbridge, Australia, assignor to The Commonwealth of Australia, Australia

Filed June 8, 1973, Ser. No. 368,357

Claims priority, application Australia, June 8, 1972, 9262/72; May 1, 1973, 3143/73

Int. Cl.[2] G01N *29/04*

U.S. Cl. 73—67.8 S 4 Claims



4. A method of ultrasonic examination of an object which comprises directing pulses of ultrasonic energy along a plurality of beams into said object, and receiving echoes of said pulses reflected along said beams by acoustic impedance discontinuities in said object, said directing step including:

directing said beams into the object from positions spaced relative to each other;

steering said beams to a plurality of angular directions in a single plane; and

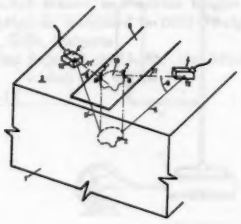
directing said pulses sequentially along each of said beams in each of said angular positions at a rate sufficiently fast, compared to the rate of movement of the transducer beams; that the beam of each transducer moves only a small distance between successive activations thereof.

3,939,697

METHOD AND APPARATUS FOR ULTRASONIC EXAMINATION

Svend Aage Lund, Birkerod, and Palle Rasmus Jensen, Vanlose, both of Denmark, assignors to Akademiet for de Tekniske Videnskaber, Svejsecentralen, Glostrup, Denmark

Filed Mar. 8, 1973, Ser. No. 339,215
Claims priority, application Denmark, Aug. 28, 1972, 4256/72
Int. Cl.² G01N 29/04
U.S. Cl. 73—67.8 S 31 Claims



1. A method of indicating, or of recording images of internal inhomogeneities in otherwise homogeneous bodies which have a substantially plane or slightly curved surface, by ultrasonic examination according to the pulse echo method, including guiding at least one angle probe connected to an ultrasonic apparatus across the surface of the body to scan its interior by emitting and receiving short-duration ultrasonic pulses in directions that form a predetermined angle with the surface of the body, and activating indicating means in response to received reflected sound pulses to produce punctiform markings on a substantially plane recording surface, characterized by the steps of moving the indicating means having an axis of indication along which the markings on the recording surface are made to thereby move the axis in the plane of the recording surface in such a way that the displacement of a reference point on the axis of indication in relation to the recording surface follows the two-dimensional displacement of the sound emission point of the probe in relation to the surface of the body on a predetermined scale, the axis of indication in relation to the recording surface following the direction of the projection of the sound path on the surface of the body, each of said markings being effected at a distance from the reference point that is proportional to the time interval that has elapsed from the emission to the reception of a sound pulse.

3,939,698

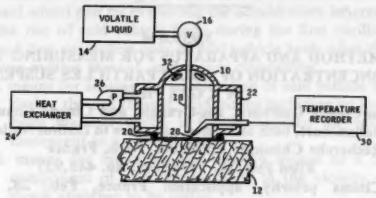
METHOD AND APPARATUS FOR MEASURING POROSITY USING A SURFACE-TEMPERATURE POROSIMETER

Thomas J. De Lacy, La Mesa, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed May 23, 1974, Ser. No. 472,572
Int. Cl.² G01N 15/08
U.S. Cl. 73—73 6 Claims

1. A porosimeter comprising:
means to supply a selected quantity of volatile liquid to a point on a porous structure surface;
a chamber in contact with said surface surrounding said point to maintain the space adjacent to said point within said chamber at a substantially constant temperature;
temperature measuring means in contact with said surface at said point; and
recording means for recording temperature over a time period after said liquid is applied at said point.

5. The method of measuring the surface porosity of a structure which comprises:
applying a selected quantity of a volatile liquid to a point on a porous structure surface;
maintaining the space adjacent to said surface near said point at a substantially constant temperature;



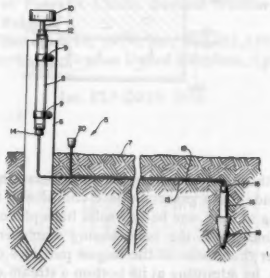
continuously measuring the temperature of said surface at said point;
continuously recording the temperature over a time period after said liquid is applied to said surface.

3,939,699

TENSIOMETER WITH REMOTE SENSING UNIT

John P. McCormick, 521 Hilmar St., Santa Clara, Calif. 95050

Filed Sept. 27, 1974, Ser. No. 509,900
Int. Cl.² G01N 7/14
U.S. Cl. 73—73 5 Claims



1. A tensiometer with remote sensing unit comprising a sight glass having an upper end and a lower end, a ceramic cup buried in the earth remote from said sight glass, a flexible capillary conducting tube having one end communicating with the lower end of the sight glass and an opposite end communicating with the cup cavity, means sealing said tube ends in the lower end of the sight glass and in said cup, a closure sealing the upper end of the sight glass, a vacuum gauge supported by said closure and communicating with the interior of the sight glass, said sight glass, tube and cup cavity being filled with water, a second flexible capillary bleeder tube having one end communicating with the cup cavity and sealed in said cup, said blender tube having a second upper end disposed below the level of the end of the conducting tube which is connected to the sight glass, and a removable cap for sealing said upper bleeder tube end.

3,939,700

MATERIAL HARDNESS TESTER

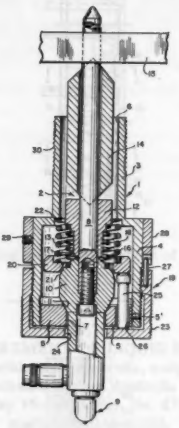
Clifford E. Anderson, Stratford, Conn., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.

Filed Aug. 15, 1972, Ser. No. 280,875
Int. Cl.² G01N 3/44
U.S. Cl. 73—83 6 Claims

1. In a material hardness tester having an apparatus for applying a major and a minor load including a housing, a plunger assembly having a plunger rod slidably secured in said housing, and a first spring means operatively connected to said

plunger rod for urging it axially in one direction under a first predetermined spring load for applying a first minor load, the improvement comprising:

a. second spring means adapted to be operatively connected to said plunger rod for urging it axially in said one direction under a second predetermined spring load for applying a second minor load different than said first minor load;



b. control means for selectively removing the second spring means from operative connection with a plunger rod to selectively permit loading of the plunger rod under said first spring load alone and under said first and second spring loads together such that either minor load can be applied independently of the other; and

c. said plunger assembly including means, with said spring means and said control means, for replacing a plunger assembly of a standard hardness tester to convert the standard tester to a multiple tester.

3,939,701

METHOD AND DEVICE FOR MEASURING THE SHEARING STRESS OF POWDERY AND/OR GRANULAR MATERIAL

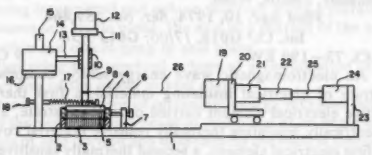
Ivan Anton Slavko Zdravko Peschl, Kennedylaan 8, Sterksel, Netherlands

Filed Sept. 11, 1974, Ser. No. 504,906

Claims priority, application Netherlands, Sept. 14, 1973, 7312665

Int. Cl.² G01N *3/24*

U.S. Cl. 73—101 **9 Claims**



1. Method for measuring the shearing stress of powdery and/or granular material with a pair of members displaceable relative to each other about a common intersection therebetween, the members being of circular cross-section with equal diameters and enclosing hollow cavities therebetween, the cavities having a common center line, said method comprising the steps of:

A. filling the cavities completely with a sample of the material,

B. placing a freely movable weight on the material in the members,

C. turning the completely filled members with respect to each other about the center line of the cavities by rotating the weight to shear the material at the intersection between the members, and

D. measuring the force required to shear the material.

3,939,702

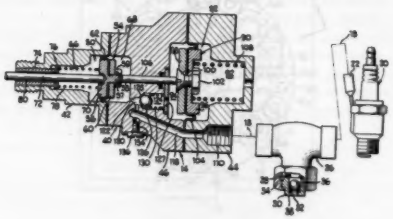
ENGINE TORQUE SENSOR DEVICE

Howard C. Paul, Des Plaines, and John J. Tuzson, Evanston, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 31, 1973, Ser. No. 365,779

Int. Cl.² G01M *15/00*

U.S. Cl. 73—115 **8 Claims**



1. A mechanism for developing a signal responsive to torque output of an internal combustion automotive engine, an automatic transmission for said engine, a control mechanism for said automatic transmission, said mechanism comprising a pressure responsive actuator connected to said control mechanism, said pressure responsive actuator having a pressure chamber with a piston therein movable in response to a pressure applied to said actuator, said piston comprising a flexible diaphragm, means connecting said chamber to at least one cylinder of said engine whereby said piston will be actuated by the average pressure in said cylinder to provide said control mechanism with an indication of torque load.

3,939,703

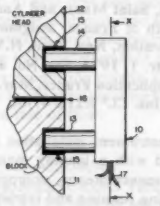
APPARATUS FOR MEASURING ENGINE CYLINDER PRESSURES

William S. Heggie, Ottawa, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sept. 16, 1974, Ser. No. 506,094

Int. Cl.² G01M *15/00*

U.S. Cl. 73—115 **3 Claims**



1. Apparatus for measuring engine cylinder pressures comprising:

a. an arcuate metal strip,

b. a pair of metal dowels attached to the ends of the strip, one of said dowels rigidly mounted in an opening in the

cylinder block and the other rigidly mounted in an opening in the cylinder head, and

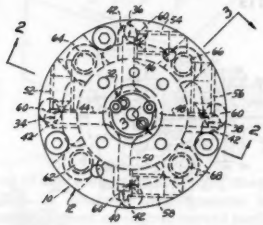
c. a transducer mounted on the strip for measuring the amount of bowing of the strip and providing an output signal related to this.

3,939,704

MULTI-AXIS LOAD CELL

Richard B. Zipin, Englewood, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 7, 1974, Ser. No. 495,364
Int. Cl.² G01L 5/16
U.S. Cl. 73—133 R **7 Claims**



1. A multi-axis load cell comprising:

a housing member,

a hub member;

means drivingly connecting said hub and said housing including a plurality of cantilever bars extending between said hub and said housing and connecting means therefor, said connecting means fixing one end of each cantilever bar to one of said hub and said housing and freely connecting the other end of each bar to the other of said hub and said housing to allow relative movement therebetween in a direction along each respective cantilever bar axis; and

means sensing relative displacements between said hub and said housing in directions parallel with the axes of said cantilever bars and producing signals corresponding thereto, whereby forces corresponding to said displacement can be measured.

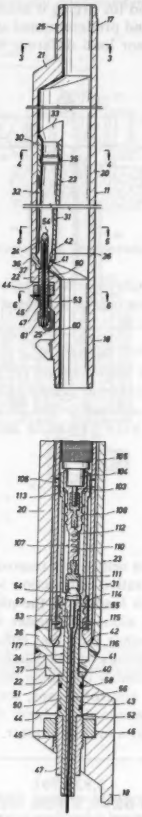
3,939,705

REMOVABLE DOWNHOLE MEASURING INSTRUMENTS WITH ELECTRICAL CONNECTION TO SURFACE

Bernard J. P. Glotin, Saint Maur, and Andre J. Guimard, Le Mee-sur-Seine, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 1, 1974, Ser. No. 447,443
Claims priority, application France, Mar. 2, 1973, 73.7449
Int. Cl.² E21B 47/06
U.S. Cl. 73—151 **9 Claims**

1. A measuring instrument installation for a well having a pipe string provided with a landing mandrel, said mandrel having an internal recess means, comprising: an elongated tubular housing having running and retrieving means thereon and adapted to be run through the pipe string and releasably secured within said recess means; a measuring instrument mounted within said housing and arranged to furnish at an output terminal an electrical signal representative of a measurement of a downhole parameter; contact means on said mandrel including an insulated conductor that extends from the interior of said recess means to the exterior of said mandrel; and a connector assembly fixed to one end of said housing and adapted to interconnect with said contact means to



provide an electrical link between said contact means and said output terminal.

3,939,706

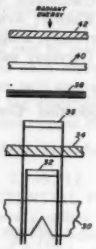
HIGH ENERGY SENSOR

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 10, 1974, Ser. No. 459,464
Int. Cl.² G01K 17/00; G01J 5/58
U.S. Cl. 73—190 EW **9 Claims**

1. An electromagnetic wave energy sensor comprising a substrate of electrical insulating material, a first thermally sensitive electrical element carried on said substrate, a layer of electrically insulating thermally resistive material covering said first electrical element, a second thermally sensitive electrical element deposited on said thermally resistive material on the side thereof opposite said first electrical element, dielectric material covering said second electrical element and adapted to become heated by wave energy incident on the sensor, a layer of metallic reflective material deposited on said dielectric material for absorbing a fixed percentage of incident wave energy, the sensor being positioned with respect to incident wave energy so that said reflective material will re-

flect the major portion of the incident wave energy, and electrical circuit means coupled to the respective electrical elements for determining the energy per unit of area impinged on said sensor.



3,939,707

MEASUREMENT OF LIQUID FLOW

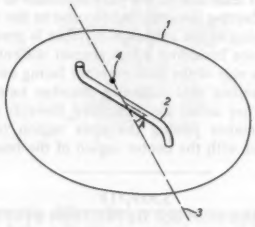
George Kossoff, Northbridge, Australia, assignor to The Commonwealth of Australia, Phillip, Australia

Filed May 15, 1974, Ser. No. 470,125

Claims priority, application Australia, May 15, 1973, 3316/73

Int. Cl.[2] G01F *1/66*

U.S. Cl. 73—194 A 6 Claims



1. A method of ultrasonic examination of a vessel within an examined object to obtain a quantitative measurement of flow of liquid in the vessel, comprising the steps of:

a. transmitting pulses of ultrasonic energy into the object and receiving echoes of said pulses reflected by acoustic impedance discontinuities within the object, the pulses being transmitted and echoes received along a plurality of beams in a single plane, the axis of a portion of the vessel within the object lying in said plane;

b. displaying said received echoes as a visualization of said portion of the vessel in said plane;

c. transmitting pulses of ultrasonic energy into said portion of the vessel along a beam in said plane at an angle to the axis of said portion and determining the shift in frequency of echoes of said pulses caused by flow of liquid in said portion;

d. determining from the display the diameter of said portion of the vessel in said plane and the angle between the axis of said portion and the beam along which the shift of frequency is determined; and

e. correlating said shift in frequency with the diameter of said portion of the vessel and said angle to obtain a measurement of the velocity of flow of liquid in the vessel.

3,939,708

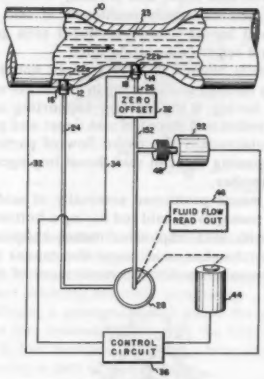
CLOSED PRESSURE REBALANCE SYSTEM FOR MEASURING THE RATE OF FLUID FLOW

Homer L. Greer, Bryn Athyn, and William F. Newbold, Philadelphia, both of Pa., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Sept. 12, 1974, Ser. No. 505,758

Int. Cl.[2] G01F *1/38;* G01L *7/08*

U.S. Cl. 73—205 R 10 Claims



1. A pressure rebalance system for measuring a rate of fluid flow through apparatus which creates a relatively high pressure region and a relatively low pressure region the differential pressure between which is proportional to the rate of fluid flow comprising in combination:

means for supporting one flexible diaphragm with a pressure proportional to the pressure of the high pressure region exerted on one of its surfaces;

means for supporting another flexible diaphragm with a pressure proportional to pressure of the low pressure region exerted on one of its surfaces;

a fluid pump having an impeller driven by an electric motor;

a closed system providing a fluid coupling between an outlet of said pump and the other surface of said one diaphragm;

a closed system providing a fluid coupling between an inlet of said pump and the other surface of said other diaphragm;

means for generating a first electrical signal indicative of the position of said one diaphragm with respect to said supporting means;

means for generating a second electrical signal indicative of the position of said other diaphragm with respect to said supporting means;

means responsive to said first and second signals for controlling the speed of said motor so that the pressure exerted by the pump on each diaphragm surface maintains each diaphragm in a predetermined position with respect to its respective supporting means; and

means responsive to the rotational speed of the impeller for determining the rate of flow.

3,939,709

APPARATUS FOR MEASURING THE FLOWRATE OF PARTICULATE SOLID MATERIAL

Joseph P. Echtler, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Filed Feb. 4, 1974, Ser. No. 438,994

Int. Cl.[2] G01F *1/30*

U.S. Cl. 73—228 7 Claims

1. Apparatus for measuring the flowrate of particulate solid material moving vertically downwardly comprising,

an expansion chamber having an internal surface with a passageway therethrough,

said expansion chamber having an upper end portion with an inlet therethrough and a lower end portion with an outlet therethrough,

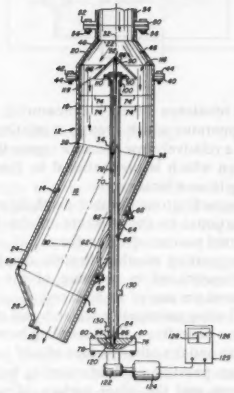
said inlet converging inwardly and upwardly from said upper end portion to form a throat for receiving the flow of the particulate solid material,

said lower end portion disposed angularly relative to said upper end portion and having an opening coaxially aligned with said upper end portion,

an impact member axially positioned in said upper end portion and having a cross-sectional area greater than that of said upper end portion inlet,

a rod coaxially aligned with said upper end portion and extending through said opening in said lower end portion, said rod having a top portion supporting said impact member within said throat of said upper end portion inlet so that substantially the entire flow of particulate solid material passing through said throat impinges upon said impact member,

responsive means positioned externally of said expansion chamber passageway, said rod having a bottom portion in contact with said responsive means externally of said expansion chamber, said responsive means operable to instantaneously measure the momentum of said particulate solid material flowing through said upper end portion inlet throat and impinging upon said impact member,



a tubular member concentrically surrounding said rod and passing through said lower end portion opening to permit vertical reciprocal movement of said rod relative to said tubular member,

said tubular member having an upper end portion positioned below said rod top portion and a lower end portion securely positioned in contact with said responsive means with said rod bottom portion extending beyond said tubular member,

said tubular member positioned in a fluid-tight relationship with said opening of said expansion chamber lower end portion,

means for maintaining axial alignment of said tubular member in said expansion chamber upper end portion,

means positioned adjacent said impact member for centering said rod within said tubular member having a sleeve threadedly engaged to said tubular member,

said sleeve having a top surface with an annular opening through which said rod passes,

a plurality of adjustment screws extending through said sleeve and having end portions positioned in abutting contact with said rod, and

locking means for selectively positioning said adjustment screws relative to said sleeve.

3,939,710

LIQUID FLOW METER

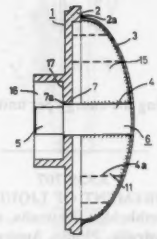
Klaus-Dieter Rothert, Gleidingen; Herbert Stilkenbaumer, Hildesheim; Gudrun Fischer; Armin Madler, and Ulrich Ross, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany and Diessel GmbH & Co., Hildesheim, Germany

Filed Aug. 8, 1974, Ser. No. 495,821

Claims priority, application Germany, Aug. 8, 1973, 2340704

Int. Cl.² G01F *3/08, 15/14*

U.S. Cl. 73—253 **13 Claims**



1. In a liquid flow meter through which can be passed both warm and cool liquids, the meter including a measuring chamber having base members between which at least one rotatable measuring member having end-faces is mounted so that the end-faces glide along the base members when the measuring member is rotated, the improvement comprising: a support structure for at least one of the base members to prevent the same from deflecting inwardly in response to the warm liquid whereby jamming of the rotatable member is precluded, said support structure including a bell-shaped stiffening member arranged at the side of the base member facing away from the measuring chamber, said stiffening member being joined to the base member about the periphery thereof; and, a rigid connecting member joining the apex region of said bell-shaped member with the center region of the base member.

3,939,711

ENGINE MISFIRE DETECTION SYSTEM

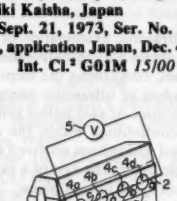
Masanori Hanaoka, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Sept. 21, 1973, Ser. No. 399,610

Claims priority, application Japan, Dec. 4, 1972, 47-120602

Int. Cl.² G01M *15/00*

U.S. Cl. 73—346 **18 Claims**



1. For an engine having cylinders with gas exhaust ports a misfire detection apparatus, comprising a plurality of temperature-responsive electrical means each mounted in the exhaust ports and each having respective variable electrical characteristics for changing their electrical characteristics in response to the temperatures at the gas exhaust ports, circuit

means connecting said electrical means for comparing the electrical characteristics of one with the electrical characteristics of another at any one time and for producing a balance when the electrical means are subject to the same termperatures and for producing an unbalance when the electrical means are subject to different temperatures, and indicator means coupled to said circuit means for indicating the condition of balance, at least one of said circuit means and the temperature imparting to each electrical means a unidirectional electrical condition, said circuit means connecting said electrical means so that the electrical condition in an equal number of electrical means oppose each other.

3,939,712

PNEUMATIC DIFFERENTIAL PRESSURE SENSOR

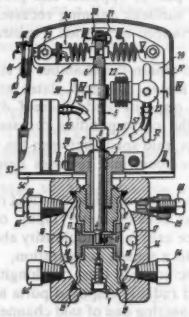
Albert Yakovlevich Jurovsky, ulitsa Baltiiskaya, 4, kv. 94; Gennady Samullovich Zelenko, Schelkovskoe shosse, 90, kv. 120, and Jury Markovich Brodkin, 1 ultisa Mashinostroenia, 8, kv. 43, all of Moscow, U.S.S.R.

Filed June 18, 1974, Ser. No. 480,496

Claims priority, application U.S.S.R., June 18, 1973, 1933183

Int. Cl.² G01L 7/00

U.S. Cl. 73—388 BN 5 Claims



1. A pneumatic differential pressure sensor comprising: a body with a hole; a bushing installed in said hole so that a portion of said bushing is located inside said body and its other portion is outside the body; a two-arm lever extending through said bushing into the body so that one arm of said lever is inside the body and the other arm outside it; a support for said lever secured to said bushing outside said body; a split block fitted around said bushing and secured to the external portion of the bushing; two flat unidirectional clamps secured to the opposite sides of said block, each clamp having one longitudinal side and two transverse sides, and being located in the planes which are parallel to the swinging plane of said lever; at least three crosspieces installed between said clamps; a pneumatic amplifier having means for feeding supply pressure to said amplifier, inlet means, pneumatic output signal means from said amplifier, which serves simultaneously as the output of the pneumatic sensor; an element sensitive to the differential pressure accomodated in said body; a nozzle-shutter element secured to one of the crosspieces and communicating pneumatically with the inlet means of the pneumatic amplifier; one arm of said two-arm lever interacting with said element sensitive to the differential pressure, and the other arm interacting with said nozzle-shutter element; a bellows secured to the second crosspiece communicating pneumatically with the sensor output and interacting with the other arm of said lever; and a zero indicator secured to the next crosspiece and linked kinematically with the other arm of said lever.

3,939,713

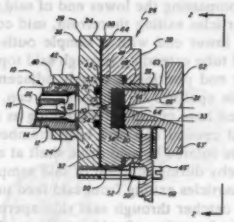
SEPTUM MOUNTING AND SHIELDING ASSEMBLY FOR SAMPLE INJECTION IN AN ANALYTICAL INSTRUMENT

Willard E. Estey, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 28, 1975, Ser. No. 554,280

Int. Cl.² G01N 1/00

U.S. Cl. 73—422 GC 9 Claims



1. In a sample injector for analytical instruments in which a sample is introduced into the instrument by means of a probe which is thrust through a self-sealing septum, a septum mounting and shielding assembly comprising:

means defining a passage through which the probe may be inserted into communication with the instrument;

a septum holder member containing a bore aligned with and constituting a part of said passage;

and means mounting said septum holder member for rotary movement about an axis eccentric to said passage whereby rotation of said member selectively moves said bore into and out of registration with said passage.

3,939,714

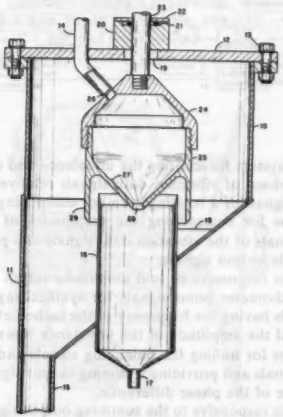
VARIABLE PERCENTAGE SAMPLER

William H. Miller, Jr., Knoxville, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 10, 1975, Ser. No. 585,626

Int. Cl.² G01N 1/20

U.S. Cl. 73—424 4 Claims



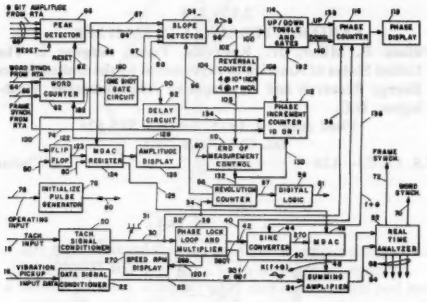
1. A sampler for obtaining variable percentage samples of particles for subsequent analyses comprising a hopper provided with a top closure member and a particle discharge conduit mounted at the lower end of an inverted conical lower

shell portion of said hopper, a drive shaft extending through said top closure member into the upper portion of said hopper and being bearingly supported by said member, a conical cap affixed to the lower end of said drive shaft and provided with a side aperture, a base member affixed to said conical cap and provided with an inverted inner conical surface terminated by an exit hole at the bottom thereof, an open top sample receiving column extending through said conical shell portion of said hopper and affixed thereto with the top open end of said column encompassing the lower end of said base member for receiving particles exiting therefrom, said column being provided at its lower end with a sample outlet conduit, and a particle feed tube extending through said top closure member with its exit end positioned closely adjacent to and aligned with said side aperture of said conical cap, said conical cap and its affixed base member functioning as a particle sample catcher, said conical cap and base member affixed thereto adapted to be rotated by said drive shaft at a selected desired speed, whereby during rotation of said sample catcher a portion of the particles exiting from said feed tube are caught by said sample catcher through said side aperture as a function of the speed of rotation of said sample catcher.

3,939,715
METHOD AND APPARATUS FOR DEVELOPING BALANCE INFORMATION FOR ROTATING EQUIPMENTS AND ASSEMBLIES

Robert D. Davis, Spring Valley, Calif., assignor to Spectral Dynamics Corporation of San Diego, San Diego, Calif.

Filed June 24, 1974, Ser. No. 482,336
Int. Cl.² G01M 1/22
U.S. Cl. 73—462 **22 Claims**



1. A system for locating the unbalance and determining the signal phase of vibration data signals relative to tachometer point signals of a rotating member comprising,

means for determining the amplitudes of the unbalance signals of the vibration data signals and providing amplitude output signals,

means responsive to said amplitude output signals and the tachometer point signals for synthesizing balancing signals having the frequency of the tachometer point signals and the amplitude of the unbalance signals,

means for nulling the balancing signals and the unbalance signals and providing summing output signals representative of the phase difference,

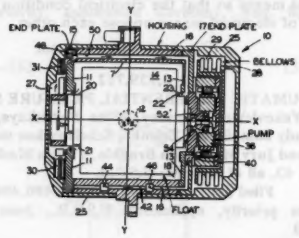
means responsive to the summing output signals for shifting the phase of the synthesized balancing signals to null the unbalance signals in said nulling means,

and means for determining the phase of the nulling synthesized balancing signals relative to the tachometer point signals.

3,939,716
ACCELEROMETER WITH LIQUID HYDROSTATIC GIMBAL SUPPORT

Howard E. Schulien, Montville; William H. Ficken, Berkeley Heights, and Robert J. Sgambati, Secaucus, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed July 17, 1974, Ser. No. 489,210
Int. Cl.² G01P 15/08
U.S. Cl. 73—516 R **4 Claims**



1. An accelerometer including a liquid hydrostatic bearing system, comprising:

a sleeve and a pair of opposite end plates having annular grooves and surfaces defining recesses, said sleeve and end plates arranged to provide a substantially cylindrical chamber;

a float disposed within the chamber in slightly spaced relation to the sleeve and end plates and including shaft members at opposite ends thereof disposed in spaced relation to the corresponding recesses defined by end plate surfaces, said space between the chamber and float and shaft members and recesses being both axial and radial;

a pendulous mass supported by the float relative to mutually perpendicular accelerometer input, output and pendulous reference axes for pendulousity about the output axis in response to a sensed acceleration;

the chamber including at least two longitudinally extending channels and radially disposed ports at opposite ends of the float connecting one of said channels with the space;

a casing surrounding the chamber and including opposite end sections;

a pump mounted in one of the end sections and including outlet ports open to the one channel and inlet ports open to the other channel, a connecting port, and the pump being effective for pumping a liquid from the pump outlet ports through the connecting port, channel and space to the pump inlet ports to provide axial and radial lift for the float; and

a pickoff and torquer operably connected to the float shaft member and being supported in the other of the end sections, and means electrically connecting the pickoff and torquer, with the torquer current being indicative of the sensed acceleration.

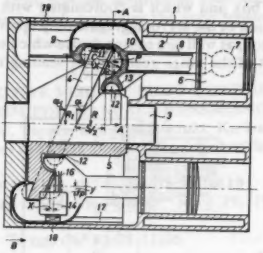
3,939,717
POWER TRANSMITTING MECHANISM FOR RECIPROCATING ENGINES OR PUMPS

Mogens Roesdahl Groth Teisen, Copenhagen, Denmark, assignor to Havera Development Ltd., London, England

Filed July 3, 1974, Ser. No. 485,757
Claims priority, application Denmark, July 5, 1973, 3746/73
Int. Cl.² F16H 23/00; F02B 75/26; F04B 1/02
U.S. Cl. 74—60 **8 Claims**

1. A reciprocating-piston engine or pump having a main shaft and a plurality of cylinders arranged circumferentially around the main shaft of the motor or pump, the axes of said cylinders being parallel to the main shaft, each piston being

connected to a crosshead through a piston rod, a swash-plate fixed to the main shaft and gripped by the crosshead while the swash-plate side surfaces are abutted by a main thrust bearing and a rear thrust bearing, slide bearings for absorbing the force components perpendicular to the main shaft, said slide bearings absorbing the inward directed components of the



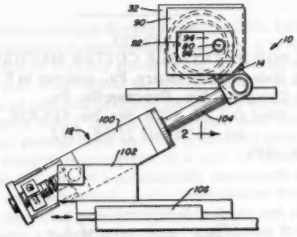
rotating transverse force vector, said slide bearings comprising at least one Michell thrust blocks sliding on an outwardly facing rotating cylindrical surface coaxial with said main shaft and rigidly connected to said swash-plate, said cylindrical surface being arranged on a thickening portion of said main shaft and locally cutting into one of the swash-plate side surfaces so as to form a recess in the swash-plate.

3,939,718

MECHANISM TO CONVERT ROTARY MOTION TO TRANSVERSE MOTION

James W. Banks, Bozman, Md., assignor to Chemetron Corporation, Chicago, Ill.

Filed May 30, 1974, Ser. No. 474,727
Int. Cl.[2] F16H *21/44*
U.S. Cl. 74—99 **7 Claims**



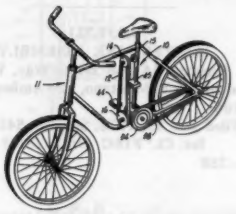
1. A mechanism for converting rotary motion to transverse motion with high mechanical advantage comprising a housing adapted to be mounted on the frame of a bellows forming machine, an element journalled to rotate about its axis in said housing and provided eccentrically with a journal, a lever extending into said housing and connected to said element, a trunnion provided with a journal, a trunnionway connected to said housing adjacent said lever and supporting said trunnion for transverse linear movement of said trunnion within said trunnionway to said axis, a shaft journalled to rotate within the journal provided in said element, one end of said shaft being provided eccentrically with an axially extending first pin journalled to rotate within the journal provided in said trunnion, said shaft having a mounting means on the other end, forming means rotatably mounted on said mounting means, power means adapted to be mounted on said frame and connected to said lever, whereby said lever rotates said element and therefore moves said shaft and said trunnionway forces said trunnion to move said first pin and therefore rotate said shaft and thereby force said mounting means and said forming means in a linear direction transverse to said axis.

3,939,719

POWER CONVERTER APPARATUS

William R. Stovall, Rte. 2, Box 30, Stuart, Okla. 74570

Filed Nov. 15, 1973, Ser. No. 416,196
Int. Cl.[2] F16H *27/02*
U.S. Cl. 74—128 **9 Claims**



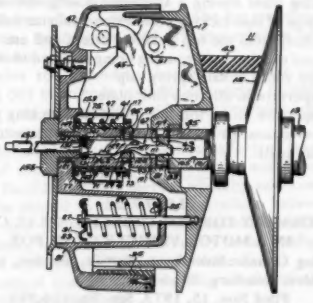
1. A reciprocator drive apparatus, comprising:
a frame;
a reciprocator supported on the frame for movement in a first and a second reciprocating direction in a driven position;
a first coupling shaft rotatingly supported on the frame;
a second coupling shaft rotatingly supported on the frame;
first connecting means drivingly connected to the reciprocator and to the first coupling shaft for rotating the first coupling shaft in a first direction of rotation and in a second direction of rotation, generally opposite the first direction of rotation, in response to the movement of the reciprocator, and, the first connecting means drivingly further connected to the second coupling shaft rotating the second coupling shaft in the first direction of rotation and in the second direction of rotation.

3,939,720

VARIABLE TRANSMISSION DRIVE PULLEY ASSEMBLY WITH SELECTIVE DRIVE

Olav Aaen, Kenosha, Wis., and Edgar Rose, Glencoe, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed July 26, 1974, Ser. No. 492,030
Int. Cl.[2] F16H *55/52*
U.S. Cl. 74—230.17 E **30 Claims**



1. A variable transmission drive pulley assembly comprising a drive shaft, a fixed sheave connected to said drive shaft for common rotation therewith, a movable sheave carried by said drive shaft for movement axially thereof relative to a retracted position spaced from said fixed sheave, means urging said

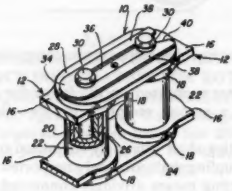
movable sheave toward said retracted position in the direction away from said fixed sheave, speed responsive means for displacing said movable sheave toward said fixed sheave, additional means movable relative to said fixed sheave for modifying the effectiveness of said speed responsive means, and control means operative independently of the rotation of said drive shaft for selectively preventing displacement of said movable sheave toward said fixed sheave by said speed responsive means and for selectively controlling operation of said additional means for modifying the effectiveness of said responsive means.

3,939,721

MASTER LINK ASSEMBLY

Frederick J. Kuenzig, 16 Bob White Way, Weatogue, Conn. 06089, and Joseph V. Montanc, 120 Amherst St., Hartford, Conn. 06106

Filed Jan. 15, 1975, Ser. No. 541,267
Int. Cl.² F16G *13/02*, *13/08*
U.S. Cl. 74—258 **4 Claims**



1. A master link assembly for releasably coupling the opposing ends of a series of articulated links to form a chain, wherein the opposing ends are defined by a pair of roller link assemblies each having a pair of opposing link plates with pitch holes extending between the opposing faces thereof and a pair of tubular bushings press fitted thereinto comprising

first and second link plates each including a pair of pitch holes extending between the opposing faces thereof,

a pair of connecting pins selectively configured for slidable insertion into the tubular bushings and for insertion into the pitch holes of said first and second link plates,

means for limiting the separation of said first and second link plates to a predetermined maximum separation,

said limiting means including a bifurcated clip spring selectively configured for placement about said connecting pins adjacent the outer face of one of said first and second link plates,

a locking plate having a U-shaped configuration, wherein the legs of said locking plate extend substantially perpendicularly from the top portion thereof and are in parallel spaced relation, said spacing being selected to correspond to the width of said spring clip

an aperture in said one link plate,

an aperture in the top portion of said locking plate, and

screw means for securing said locking plate to said one link plate.

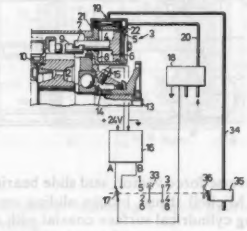
3,939,722

ARRANGEMENT FOR CONTROLLING GEAR CHANGES IN A MOTOR VEHICLE GEAR BOX

Jan Erling Gunnar Stromberg, Partille, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Nov. 15, 1973, Ser. No. 416,093
Claims priority, application Sweden, Nov. 17, 1972, 14981/72
Int. Cl.² F16H *5/60*, *3/02*
U.S. Cl. 74—336 **6 Claims**

1. In a gear box comprising a main gear box with a number of gear ratios, and a two-geared range gear box coupled to a driven shaft of the main gear box, said range gear box having such gear ratios that the total gear ratio of the gear box with the higher ratio in the range box and the lowest ratio in the main box is higher than that with the lower ratio in the range gear box and the highest ratio in the main gear box, and an arrangement for controlling the shifting between two gear ratio ranges, said arrangement comprising a servo-aggregate which is connected to the gear-driving mechanism of the range gear box and which is coordinated with means which start operation of the servo-aggregate only upon shifting in the main gear box, as well as a sensor device which coacts with the driven shaft of the range gear box for reading the rpm of the



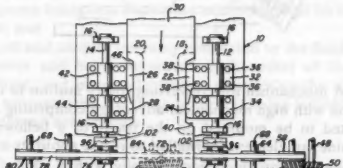
shaft; the improvement in which said sensor device is connected to a control unit having at least two outputs over which the control unit provides a signal for maneuvering the servo-aggregate during shifting in the main gear box for shifting in the range gear box, said control unit providing a signal over the first output when the rpm of the driven shaft passes a first low rpm while increasing or decreasing, and over the second output when the rpm passes a second, greater rpm while increasing or decreasing, at least one of a plurality of two-position changeover switches adjusted by the lateral movement of a gear lever in the neutral position being connected between the two outputs for shifting an operating output of the gear box.

3,939,723

DRIVE FOR ROTATABLE CUTTER MECHANISMS

Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Oct. 16, 1974, Ser. No. 515,534
Int. Cl.² F16H *35/08*, *7/12*
U.S. Cl. 74—401 **3 Claims**



1. Apparatus for providing automatic take-up of a timing belt comprising,

a drive shaft mounted for planar linear movement in opposite directions,

a drive shaft fixedly positioned and rotatably mounted adjacent to said driven shaft,

a pulley mounted on said driven shaft,

a drive pulley mounted on said drive shaft,

a take-up pulley rotatably mounted between said drive pulley and said driven pulley, said take-up pulley

mounted for planar linear movement in opposite directions,

an endless timing belt reeved about said drive pulley, said driven pulley and said take-up pulley so that rotation of said drive shaft transmits rotation to said driven shaft, and

means connecting said driven pulley to said take-up pulley so that both said driven pulley and said take-up pulley move the same linear distance in the same plane so that said driven shaft may be adjusted in said linear plane while said timing belt maintains the same tension.

3,939,724

AUTOMOTIVE VEHICLE SHIFT CONTROL MECHANISM FOR MANUAL TRANSMISSIONS

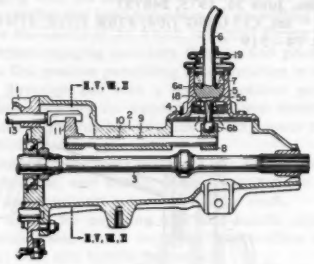
Yasuie Takahashi, Toyota, and Isao Tsuzuki, Kariya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed July 18, 1974, Ser. No. 489,610

Claims priority, application Japan, Nov. 19, 1973, 48-129159

Int. Cl.² F16H 57/06

U.S. Cl. 74—476 **15 Claims**



1. In a manual multiple-forward-speed vehicle transmission having transmission means shiftable between a reverse drive and a plurality of forward speed ratios, a manual shift lever controlling said transmission means by movement through a shift pattern of selection positions including a neutral position, said shift lever being connected to shift said transmission means to said reverse drive and to one forward speed ratio by movement thereof, respectively, to a pair of selection positions lying at the ends of a substantially linear path extending across said neutral position, and a transmission lever operatively interconnected between said shift lever and said transmission means; a misshift preventive mechanism for controlling movement of said shift lever along said linear path between said selection positions for said reverse drive and said one forward speed ratio, said misshift preventive mechanism comprising a projection extending from said transmission lever, a pin located to be engaged by said projection, a housing having said pin mounted therein for movement relative thereto between an extended position and a retracted position, said housing being mounted for movement in directions transversely of the directions of movement of said pin with the path of movement of said housing including an initial position defined therealong, said projection being configured to cause retraction of said pin when said shift lever is within said linear path at said neutral position and to permit movement of said pin to said extended position when said shift lever is moved along said linear path away from said neutral position, said pin being arranged to be engaged by said projection when said pin is in said extended position to cause movement of said housing when said shift lever is moved along said linear path, stopper means for restricting movement of said housing, and spring means biasing said housing for movement to its initial position.

3,939,725

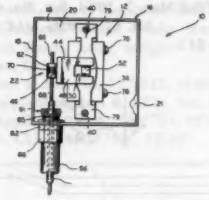
REMOTE SWITCH ACTUATING DEVICE

William J. Fisher, Lisle, Ill., assignor to Maynard Braverman, Chicago, Ill., a part interest

Filed Oct. 25, 1973, Ser. No. 409,479

Int. Cl.² G05G 1/00

U.S. Cl. 74—503 **4 Claims**



1. In an arrangement for shifting an off-on electrical switch, between off and on positions, that is remote from the operator, in which arrangement the switch is mounted in a fixedly mounted switch box and includes a rocker arm for shifting the switch between its said positions, an electrically insulated actuator mechanism for actuation by the operator, which actuator mechanism is located remotely from said box, and drive rod means extending between said box and said actuator mechanism and operatively connected between said switch rocker arm and said mechanism for effecting shifting of said switch between its said positions utilizing said actuator mechanism, the improvement wherein:

said actuator mechanism is mounted in an electrically isolated box and includes a rocker arm adapted to be hand operated by the operator.

electrical conduiting extending between said boxes,

said conduiting having one of its ends connected to said switch box and the other of its ends connected to said isolated box,

said conduiting ends being connected to the respective boxes by electrical fitting means each including a tubular body extending into the respective boxes and means for making the respective bodies fast to their respective boxes,

said drive rod means comprising:

a guide tube extending between said boxes and through said conduiting and said bodies of the respective fitting means,

each of said fitting means bodies having a compressible bushing press fitted therein into compressed gripping relation with said guide tube,

stop means carried by said guide tube for maintaining the respective bushings in said gripping relation with said guide tube,

and a drive rod extending through said guide tube and having one of its ends operably connected to said switch rocker arm and the other of its ends operably connected to said actuator mechanism rocker arm,

said guide tube and said drive rod being formed from materials of self lubricating characteristics and being resiliently flexible laterally thereof whereby said conduiting may be shaped in diverse configurations between said boxes and said guide tube may be housed within said conduiting in substantial conformity to the configuration of said conduiting longitudinally thereof,

said electrical conduiting being free of electrical wiring extending therethrough,

said means for maintaining the respective bushings in their said gripping relations with said guide tube comprising clamp devices fixed to said guide tube within the respective boxes and substantially abutting the respective bushings,

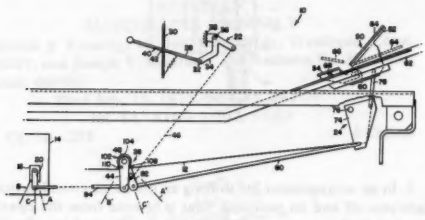
said bushings being jam fitted in their respective fitting means bodies to resist movement exteriorly of the respective boxes.

3,939,726

INTERLOCKED HAND- AND FOOT-OPERABLE ENGINE SPEED CONTROL

Barry Louis Ahrens, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 7, 1974, Ser. No. 448,910
Int. Cl.² G05G 1/14
U.S. Cl. 74—513 5 Claims



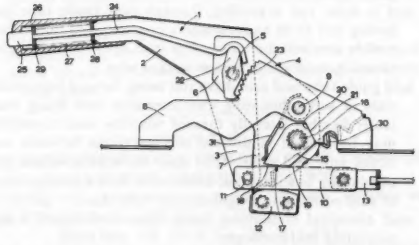
1. A foot pedal arrangement for actuating an engine fuel control device so as to selectively effect acceleration or deceleration of an internal combustion engine, comprising: first and second separate pedal sections pivotally mounted for independent swinging in opposite first and second directions about a fixed pivot axis; a control linkage means interconnecting said first pedal section with said fuel control device for respectively affecting increases and decreases in fuel flow and respective attendant acceleration and deceleration of engine speed when the first pedal section is respectively moved in said first and second directions; and said first and second pedal sections including one-way connecting means for effecting movement of said second section in said first direction in response to and concurrently with movement of said first section in said first direction and for effecting movement of said first section in said second direction in response to and concurrently with movement of said second section in said second direction.

3,939,727

MECHANICAL ACTUATING SYSTEM

Anthony Asquith, Nuneaton, England, assignor to Girling Limited, Birmingham, England

Filed Sept. 17, 1974, Ser. No. 506,857
Claims priority, application United Kingdom, Sept. 18, 1973, 43655/73
Int. Cl.² G05G 1/04
U.S. Cl. 74—516 14 Claims



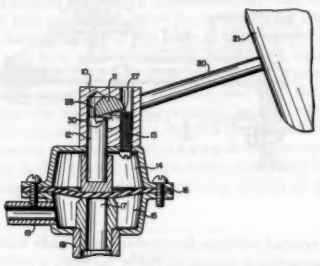
1. A mechanical actuator system for applying an actuating force to an actuated member which is to be moved or to which pressure is to be applied comprising a primary lever, a secondary lever, a fixed part, a first pivot on said secondary lever about which said primary lever is movable by an actuating force through a first range until reaction to said actuating force attains a predetermined value, a second pivot on said fixed part about which said secondary lever is angularly movable with said primary lever through a second range into an applied position after said reaction attains said predetermined value whereby said actuating force is transmitted to said actuated member through a higher leverage, a one-way clutch for coupling said secondary lever to said actuated member through said second range, said clutch normally being disengaged but being engaged as said secondary lever is moved about said second pivot, ratchet teeth on said fixed part, and a pawl connected to said first and second levers by said first pivot and engageable with said ratchet teeth to hold said levers in said applied position at least when said clutch is engaged.

3,939,728

DOUBLE LEVER-FULCRUM CONTROL DEVICE FOR CONTROLLING THE OPENING AND CLOSING OF A FLUID VALVE

Enrique Klien Wallstein, Lima, Peru, assignor to Tecnologia Aplicada S.A., Lima, Peru

Filed Mar. 12, 1974, Ser. No. 450,447
Claims priority, application Peru, Mar. 15, 1973, 135955; Argentina, June 26, 1973, 248757
Int. Cl.² G05G 1/04; F16K 31/18, 31/44
U.S. Cl. 74—519 9 Claims



1. A control device for controlling the opening and closing of a fluid valve of the type having a thrust element movable from a first open valve position to a second closed valve position, said control device being of the double lever-fulcrum type having a longer power lever and a shorter thrust lever fixed together to pivot about a fulcrum to move said thrust element from said first position to said second position upon the application of a force to said power lever, the improvement comprising:

a control lever body fixed to the body of said valve, said control lever body having therein a first opening for receipt of at least a portion of said thrust element, said control lever body having therein a second opening transverse to said first opening;

a single solid cylindrical shaft mounted to rotate about the longitudinal axis thereof at a position adjacent to said thrust element, said fulcrum comprising said longitudinal axis of said shaft, said shaft rotatably mounted in said second opening of said control lever body;

said shaft having therein a notch providing a flat surface having first and second end edges on the periphery of said shaft, said flat surface being a diameter of said shaft passing through said longitudinal axis, said first end edge of said surface contacting said thrust element, said thrust lever comprising a radius of said shaft extending from said longitudinal axis to said first end edge of said surface; and

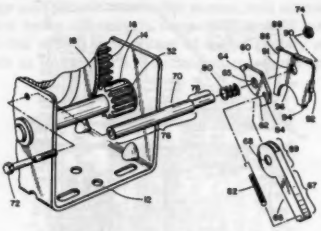
said power lever being fixed to said shaft to extend outwardly from said periphery thereof.

3,939,729

PAWL AND RATCHET CONSTRUCTION FOR HAND WINCH

Norman D. Brockelsby, Grand Island, Nebr., assignor to Dutton-Lainson Company, Hastings, Nebr.

Filed Oct. 3, 1974, Ser. No. 511,657
Int. Cl.² F16D 49/00
U.S. Cl. 74—575 10 Claims



1. In a winch having a winch reel, a driving gear, a driven gear engaging with the driving gear connected to the winch reel, and a ratchet and pawl apparatus for permitting forward and reverse movement of the winch, said pawl having first and second ratchet-engaging members thereon and pivotal on a shaft into a first position permitting winch rotation in only one rotational direction and into a second position permitting winch rotation in only the opposite rotational direction, an improvement in the ratchet and pawl arrangement comprising, in combination:

handle means for pivoting said pawl into said first and second positions, said handle means mounted for translational and rotational movement on the shaft,

latching means for engaging with said handle means and maintaining said handle means in fixed position when in contact with said handle means; and

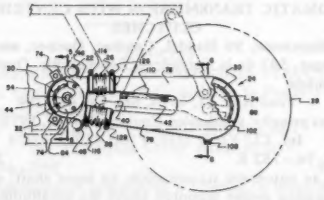
biasing means for translating said handle means against said latching means whereby the pawl is maintained in the desired position until a deliberate translational force is exerted on the handle means sufficient to overcome the force of the biasing means.

3,939,730

HOUSING FOR MOTORCYCLE DRIVE CHAIN

Robert D. DeHaan, 775 SE. 16th St., Hillsboro, Oreg. 97123

Filed Oct. 8, 1974, Ser. No. 513,077
Int. Cl.² F16P 1/00
U.S. Cl. 74—611 10 Claims



1. A chain housing, adapted for mounting on a conventional chain-driven motorcycle to enclose the drive sprocket, drive chain and rear wheel sprocket thereof, comprising:

a. a front housing section enclosing a drive sprocket and a portion of a drive chain;

b. a rear housing section enclosing a rear wheel sprocket and the remaining portion of said drive chain;

c. means for flexibly coupling said front housing section to said rear housing section;

d. means for removably attaching said rear housing section to a frame member of a motorcycle;

e. a cup-shaped gland member removably attached to the rear wheel hub of said motorcycle; and

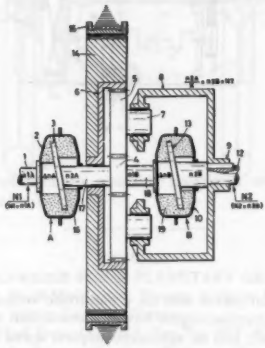
f. an annular lip seal removably attached to said rear housing section and sealingly engaging said gland member.

3,939,731

DIFFERENTIAL TORQUE MULTIPLYING DEVICE

Ubaldo Ranzi, deceased, late of Legnano, Italy, by Cristiana Ranzi, Cesare Giannetta Ranzi, Giulio Ranzi, Riccardo Ranzi and Matteo Ranzi, heirs, assignor to S.p.A. Ranzi Legnano, Legnano, Italy

Continuation-in-part of Ser. No. 127,323, March 23, 1971, abandoned. This application Jan. 8, 1974, Ser. No. 431,777
Claims priority, application Italy, Mar. 24, 1970, 22396/70
Int. Cl.² F16H 47/08, 57/10
U.S. Cl. 74—688 5 Claims



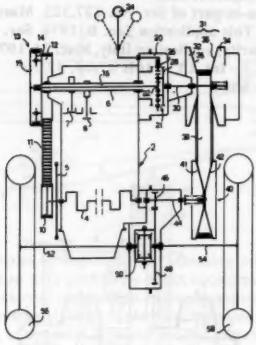
1. A differential torque transmitting device comprising first and second rotary slip couplings, the second being of a type whereof the torque-transmitting capacity increases as the rotational speed of the coupling increases, each of which couplings has an input member and an output member, the output member of the first coupling being directly connected to the input member of the second coupling and the output member of the second coupling being connected to the input of a driven machine, an epicyclic reduction gear train having an input element connected to the output member of the first coupling at a speed which bears a constant relationship to the speed of the input member of the second coupling, a reaction element, associated with said gear train, and an output element drivingly connected to the output element of the second coupling, and means acting to hold said reaction element of said gear train fixed against rotation in one direction only and adapted automatically to release said reaction element for rotation in the opposite direction to discontinue the transmission of power through the epicyclic gear train to the output element of the second coupling and to permit the speed of the output member of the second coupling to rise to a value equal to that of the input member of the second coupling, said second coupling being designed so that, whenever the input shaft of the driven machine slows down as a result of an external cause, the torque transmitted backwards by the output member of the second coupling to the first coupling is always lower than the torque transmitted by the output member of the said first coupling to the second coupling.

3,939,732

POWER UNIT FOR VEHICLES INCORPORATING AN AUTOMATIC STEPLESS SPEED CHANGE GEAR

Dante Giacosa, Turin, Italy, assignor to Sira Societa Industriale Richerche Automotoristiche, Turin, Italy

Filed May 2, 1974, Ser. No. 466,338
Claims priority, application Italy, May 10, 1973, 68333/73; Jan. 8, 1974, 67027/74
Int. Cl. F16h *37/08*, *55/52*; B60k *17/34*
U.S. Cl. 74—701 3 Claims



1. Vehicular power unit for a motorized vehicle having an internal combustion engine having a crankshaft and an overhead camshaft, and an automatic stepless speed change gear having at least one expansible driving pulley connected to the engine and driven thereby, at least one expansible driven pulley, and a belt connecting said driving and driven pulleys, wherein the improvements comprise said camshaft is hollow and has a central longitudinal axial cavity; an intermediate drive shaft extending within said longitudinal axial cavity within said camshaft; toothed belt transmission means drivingly connecting one end of said intermediate drive shaft to said engine; a centrifugal friction clutch coupling said intermediate drive shaft to said toothed belt transmission, said centrifugal friction clutch having centrifugal elements which are carried by a toothed pulley of said toothed belt transmission and a drum which is connected to the adjacent end of said intermediate drive shaft; and means operatively connecting the other end of said drive shaft to said at least one driving pulley of the speed change gear.

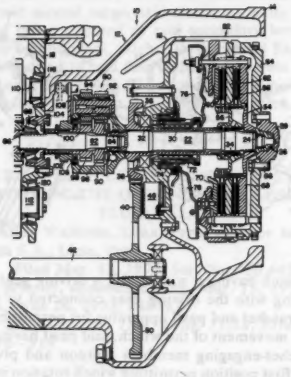
2. Vehicular power unit for a motorized vehicle having an internal combustion engine having a crankshaft and an overhead camshaft, and an automatic stepless speed change gear having at least one expansible driving pulley connected to the engine and driven thereby, at least one expansible driven pulley, and a belt connecting said driving and driven pulleys, wherein the improvements comprise said camshaft is hollow and has a central longitudinal axial cavity; an intermediate drive shaft extending within said longitudinal axial cavity within said camshaft; first means drivingly connecting one end of said intermediate drive shaft to said engine; and second means operatively connecting the other end of said drive shaft to said at least one driving pulley of speed change gear, wherein the stepless speed change gear is provided with a single driving pulley situated upon the same axis as the intermediate drive shaft and including a reversing device connecting said driving pulley to said drive shaft.

3,939,733

MECHANICAL TRANSMISSION AND CONTROLS THEREFOR

Peter Donald Wetrich, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 30, 1974, Ser. No. 492,951
Int. Cl.[2] F16H *37/00*
U.S. Cl. 74—740 7 Claims



1. A mechanical transmission including an input member, an output member, speed change means coupled between the input and output members and being selectively setable in a plurality of transfer ratio conditions, first and second manual control means rockable about a fixed axis, first control linkage means coupled between the first manual control means and the speed change means to set the speed change means in direct or underdrive transfer ratio conditions upon movement of the first manual control means between first and second positions, respectively, second control linkage means coupled between the speed change means and the second manual control means to set the speed change means in any one of a plurality of transfer ratio conditions within the direct or underdrive transfer ratio conditions upon movement of the second manual control means to any one of a plurality of positions, and interlock means acting between the first and second manual control means to prevent movement of the first and second manual control means to positions in which the speed change means is set in the highest of the plurality of transfer ratio conditions within the underdrive transfer ratio condition.

3,939,734

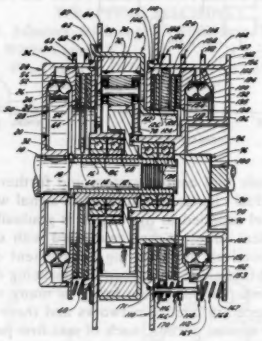
AUTOMATIC TRANSMISSION WITH CENTRIFUGAL CLUTCHES

Henri Blanchette, 99 Haudel, Candiac, Quebec, and Gerard Belanger, 543 de la Verendrye, Boucherville, Quebec, both of Canada

Filed Apr. 11, 1974, Ser. No. 460,204
Claims priority, application Canada, Feb. 12, 1974, 192454
Int. Cl.[2] F16H *3/74*; F16D *43/06*, *43/24*
U.S. Cl. 74—752 E 20 Claims

1. In an automatic transmission: an input shaft; extensible roller bearing means mounted about the longitudinal axis of said input shaft and carrying radially movable centrifugal roller means; pressure disc means enclosing said bearing means and having surface presenting means for contacting engagement with said roller means, at least one of said pressure disc means being axially displaceable under the influence of a first predetermined centrifugal force on said roller means; first clutch disc means disposed adjacent said one of said pressure disc means and adapted to be frictionally contacted by said one of said pressure disc means when axially displaced; a planetary gear assembly including a sun gear, planet gear

means and an outer ring gear, said sun gear being operatively connected to said first clutch disc means; means to prevent rotation of said outer ring gear in a direction opposite to that of said sun gear; an output shaft operatively connected to said planet gear means and in axial alignment with said input shaft; second clutch disc means disposed adjacent another of said pressure disc means: said other of said pressure disc means being axially displaceable under the influence of a second centrifugal force on said ring means and adapted to frictionally engage said second clutch disc means, said second clutch disc means being operatively connected to said outer ring gear; the size of said gear means of said planetary assembly being such as to provide a reduction in rotational speed between said input shaft and said output shaft for a low rotational speed of said input shaft; said surface presenting means on said one of said pressure disc means including a radially extending face in contacting engagement with said roller means for idle speeds of said input shaft and a first inclined face to receive pressure from said roller means for increased rotational speeds of said input shaft causing said one of said pressure disc means to engagedly contact said first clutch disc means; said other of said pressure disc means including a second inclined face to receive pressure from said roller means for further increased rotational speeds of said input shaft causing said other pressure disc means to engagedly contact said second clutch disc means whereby a direct drive is obtained between input and output shafts.



3,939,735

DOUBLE EPICYCLIC TRANSMISSION STRUCTURE

George E. Lewis, Gastonia, N.C., assignor to Power-Flo Products, Inc., Gastonia, N.C.

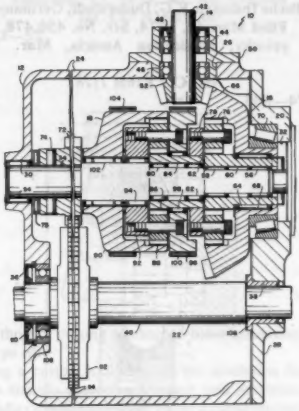
Filed Apr. 18, 1974, Ser. No. 461,862

Int. Cl.² F16H *57/10*; F16D *41/02*

U.S. Cl. 74—758 **9 Claims**

1. A transmission comprising a housing, a drive shaft extending through said housing and journaled therein for rotation, an input shaft extending into the housing, first eipcyclic gear structure rotatably mounted on said drive shaft, means for driving the first epicyclic gear structure from said input shaft, second epicyclic gear structure positioned on said drive shaft adjacent said first epicyclic gear structure and engaged with said first epicyclic gear structure for rotation thereby and including means for rotating the drive shaft in opposite directions to provide forward and reverse drive in accordance with the rotation of the second epicyclic gear structure, an output shaft and means for driving the output shaft from the drive shaft.

2. Structure as set forth in claim **1** and further including



speed control structure operably associated with said first epicyclic gear structure.

3,939,736

PLANET CARRIER FOR A PLANETARY GEAR TRAIN

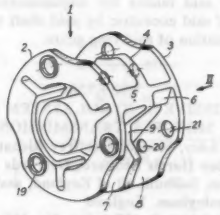
Jean Morin, Rueil-Malmaison, France, assignor to Regie Nationale des Usines Renault, France

Filed Sept. 12, 1974, Ser. No. 505,373

Claims priority, application France, Oct. 10, 1973, 73.36224

Int. Cl.² F16H *1/28*

U.S. Cl. 74—801 **7 Claims**



1. In a planet carrier comprising two lateral radial flanges and a middle radial flange, the improvement comprising two sets of ribs of equal number connecting the respective lateral flanges and the middle flange, the ribs being spaced around the planet carrier and extending longitudinally and radially inward from the periphery of the planet carrier, each pair of adjacent ribs of each set together with the corresponding lateral flange and the middle flange delimiting a recess, each recess between one lateral flange and the middle flange opening through an aperture in the middle flange into a corresponding one of the recesses between the middle flange and the other lateral flange.

3,939,737

EPICYCLIC TRANSMISSION WITH ECCENTRIC DRIVE AND THRUST-TRANSMITTING BODIES IN STATIONARY GUIDE

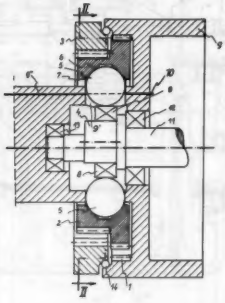
Eduard Horvath, Vienna, Austria, assignor to Otto Bock Orthopädische Industrie K G, Duderstadt, Germany

Filed Mar. 12, 1974, Ser. No. 450,478

Claims priority, application Austria, Mar. 16, 1973, 2387/73

Int. Cl.² F16H *1/28*

U.S. Cl. 74—805 **10 Claims**



1. An epicyclic transmission comprising:
a stationary member;
a fixed ring gear secured to said member;
a driven ring gear coaxial with and adjacent said fixed ring gear, said ring gears being of different diameters;
a drive shaft journaled in said member;
an eccentric on said drive shaft offset from the axis of said ring gears;
a multiplicity of independently movable thrust-transmitting bodies bearing generally radially upon said eccentric at peripherally spaced locations;
stationary guide means for said bodies integral with said member; and
a stepped annular planet pinion movably disposed between said guide means and said ring gears in meshing engagement with the latter, said pinion being internally supported by said bodies for displacement thereby upon rotation of said eccentric by said shaft with consequent relative rotation of said ring gears.

3,939,738

SPEED RESPONSIVE CONTROL SYSTEM FOR VEHICLE MOTOR & TRANSMISSION

Anthony John Adey, Slough; Geoffrey Richard French, Weybridge; Gordon Harris Leonard, Gerrards Cross, and Malcolm Williams, Solihull, all of England, assignors to C.A.V. Limited, Birmingham, England

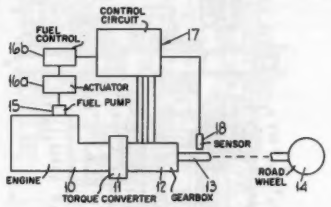
Filed Apr. 9, 1974, Ser. No. 459,344

Claims priority, application United Kingdom, Apr. 14, 1973, 18092/73

Int. Cl.² B60K *41/04*; F02B *3/00*

U.S. Cl. 74—859 **4 Claims**

1. A control system for a vehicle, the vehicle including an engine which is coupled through a multi-ratio gear box to the transmission of the vehicle, ratio engaging means for selecting the gear ratios of the gear box respectively, the engine have a fuel system including a pump, the control system including control networks associated with the ratio engaging means respectively, means responsive to the speed of the vehicle for supplying a vehicle speed signal to the control networks, said networks being arranged to effect a change in the selected ratio of the gear box as the vehicle speed increases, the control system also including an electronic fuel control system for adjusting the quantity of fuel supplied to the engine by the pump in accordance with an engine parameter and a desired operating condition, the control system also including first electrical circuit means responsive to a change in the state of a component in one of the control networks as occurs when the particular network is effecting engagement of a new ratio, said first electrical circuit means effective a temporary change in a control signal of the electronic fuel control system to produce a temporary reduction in the quantity of fuel supplied to the engine, a temporary reduction in the quantity of fuel supplied to the engine, said first electrical means including means for delaying the temporary change in the control signal



of the electronic fuel control system and further means for causing a gradual change in said control signal whereby the quantity of fuel supplied to the engine is gradually reduced, second electrical circuit means associated with said control networks respectively for delaying engagement of the new ratio, and said first electrical circuit means being divided into first and second portions, there being as many of said first portions as there are control networks and there being provided a single second portion, each of said first portions providing a control pulse of a predetermined time duration for said second portion when the associated control network is effecting engagement of its associated gear ratio.

3,939,739

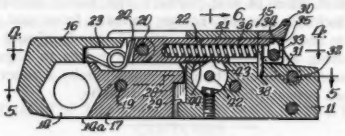
ADJUSTABLE RATCHET WRENCH

Mike D. Kotsakis, Des Plaines, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed June 3, 1974, Ser. No. 475,975

Int. Cl.² B25B *13/28*, *13/14*

U.S. Cl. 81—91 R **7 Claims**



1. In an adjustable ratchet wrench having a handle, a first jaw, means for pivotally mounting said jaw to the handle, a second jaw, a carrier, means for pivotally mounting said second jaw to said carrier, means for movably mounting the carrier to the handle for variably spacing the second jaw relative to the first jaw permitting the jaws to be disposed in a gripping position wherein they grip therebetween an element to be turned as an incident of the handle being swung in a gripping direction and move in a release direction to a release position wherein they release the element therebetween as an incident of the handle being reversely swung thereby to provide a ratcheting of the element, the improvement comprising stop means on the handle for limiting pivotal jaw release movement of said first jaw to maintain the ratcheting arrangement of the jaws, said means for movably mounting the carrier to the handle comprising one-way ratchet means for adjustably spacing said second jaw relative to said first jaw in any one of a plurality of preselected discrete positions, and further

including manually operable means for urging said second jaw to an element-engaging adjusted position in the direction of free movement of the ratchet means, whereby said ratchet means retains the said second jaw in the adjusted element-engaging position for selective gripping and release of the element as an incident of said swinging of the handle, manually operable release means for releasing the ratchet means to permit free adjustable increased spacing of said second jaw relative to the first jaw, and means biasing said second jaw toward a retracted maximumspaced position whereby said second jaw is moved to said retracted position upon release of the ratchet means.

3,939,740

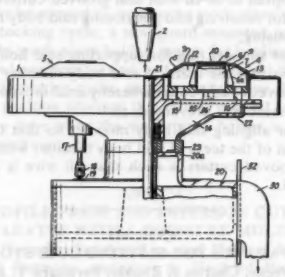
WRAPPER CUTTER FOR AUTOMATIC CIGAR WRAPPING MACHINE

Herman W. Johnson, Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed May 7, 1974, Ser. No. 467,690

Int. Cl.² A24C *1/04*

U.S. Cl. 83—24 **9 Claims**



9. The method of processing a strip of tobacco having a first surface and a second oppositely facing surface in a cigar machine which comprises a cutting die unit for cutting a strip of tobacco to the desired shape, said die unit being movable from a first position to a second position and having a cutting edge which conforms to said shape and defines a space of said shape therewithin and having a portion adjacent to said cutting edge at the side thereof opposite from said space, said portion having apertures extending therethrough, said method comprising placing a strip of tobacco larger than the area of said shape on said cutting edge with said first face of said strip facing said portion, maintaining said strip thereon by drawing air through said apertures in a first direction extending away from said first face, pressing said strip against said cutting edge with said die unit in said first position to cut a portion of said strip into said shape while leaving other portions thereof on said portion of said die unit, removing said cut portion of said strip from said die unit, moving said die unit away from said first position toward said second position, and after said die unit has been moved from said first position, passing air through said apertures in a second direction opposite to said first direction to dislodge said other portions of said strip from said portion of said die unit while removing said other portions by suction directed away from said portion of said die unit.

3,939,741

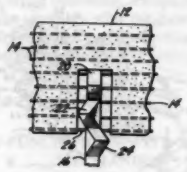
METHOD AND APPARATUS FOR CUTTING REINFORCED FOAM

Winford K. Allan, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 23, 1974, Ser. No. 535,186

Int. Cl.² B26D *3/00*

U.S. Cl. 83—52 **2 Claims**



1. A method of cutting reinforced foam insulation comprising the steps of:

a. passing a cutting tool through the insulation first cutting across strands extending through said insulation; and

b. thereafter cutting the foam along a plane spaced from the cut ends of said strands and removing said foam adjacent thereto to thus expose the cut ends of said strands, said method being repeated until the cutting of the strands and foam has been completed whereby the plane of the tips of said ends is spaced from the plane of the cut surface of said insulation.

3,939,742

METHOD AND APPARATUS FOR AUTOMATICALLY CUTTING FABRICS AND THE LIKE

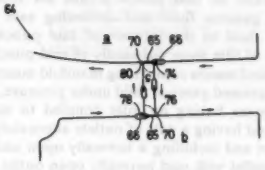
Rolf Jung, Waiblingen, Germany, assignor to Krauss & Reichert Spezialmaschinenfabrik, Fellbach, Germany

Filed May 13, 1974, Ser. No. 469,297

Claims priority, application Germany, May 18, 1973, 2325426

Int. Cl.² D06H *7/00*

U.S. Cl. 83—56 **4 Claims**

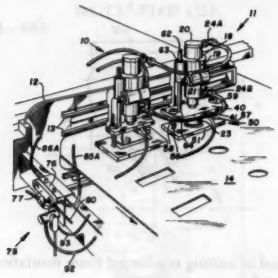


1. In a process for automatically cutting fabric in a cutting plane by means of a knife having a cutting edge the movement of which is controlled by a sensor in accordance with a cutting pattern template containing the cutting information to be sensed in the form of a single continuous line made up of contour lines of pattern parts and contour line parts of small bars interconnecting the pattern parts and in which said contour lines and contour line parts run together to form sharp corners in said line, the step of running said cutting edge through at least one of said sharp corners for a distance substantially equal to the width of a bar following its approach to said one corner from one direction and before turning said edge to a new direction.

3,939,743
PUNCH FOR FILM PRODUCTS HAVING IMPROVED SLUG REMOVAL FACILITY

William S. Coombes, Somerset, Mass., assignor to Sheldahl, Inc., Northfield, Minn.

Filed Feb. 18, 1975, Ser. No. 550,203
Int. Cl.² B26D 7/18
U.S. Cl. 83—98 2 Claims



1. In combination with a punch assembly for perforation of flexible film products with cooperatively arranged punch and die assemblies, and means for ejecting film slugs from said punch means; pneumatic punch drive means and control means for said punch drive means and said film slug-ejecting means:

a. said punch assembly including frame means for retaining a reciprocating punch and a stationary die, a punch assembly including a punch member mounted on said frame means and including drive means for stroking said punch member in reciprocatory to-and-fro motion for extension and retraction thereof along a certain linear path;

b. a die-assembly mounted on said frame means and having a punch-receiving bore formed therein;

c. said pneumatic punch drive means comprising a double acting cylinder with a piston and ram operatively associated therewith, axially spaced port means for introducing compressed gaseous fluid into said cylinder including a first port for drivably extending and a second port for drivably retracting said piston and ram;

d. said film slug-ejecting means comprising slug-ejection port means on said punch means for receiving compressed gaseous fluid and delivering said compressed gaseous fluid to the interior of said punch means for ejection of film slugs outwardly of said punch means;

e. said control means comprising manifold means for receiving compressed gaseous fluid under pressure, first control valve means having an inlet coupled to said manifold means and having a pair of outlets alternately coupled to said inlet and including a normally open and a normally closed outlet with said normally open outlet having conduit means coupling said normally open outlet to said second cylinder port and with said normally closed outlet having conduit means coupling said normally closed outlet to said first cylinder port;

f. second control valve means having an inlet coupled to said manifold means and having an outlet port intermittently coupled to said inlet port with conduit means coupling said outlet port to said slug-ejecting port means; and

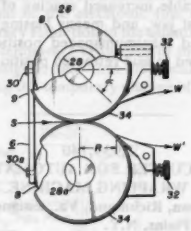
g. first control valve timing means for controllably actuating said first control valve means to simultaneously close said normally open outlet port and open said normally closed outlet port for ram extension; and

h. second control valve timing means for controllably actuating said second control valve means to intermittently couple said second control valve means inlet port to said second control valve means outlet port.

3,939,744
WIRE EXTRACTOR

Bernhard T. Junker, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 30, 1974, Ser. No. 519,165
Int. Cl.² B23D 19/06, 33/00
U.S. Cl. 83—118 7 Claims



1. A wire extractor for use in combination with a slitter having a stationary housing, a pair of arbors mounted in said housing and grooved cutters positioned on said arbors, comprising:

a body member having teeth and grooves wherein said teeth are adapted to mesh with said grooved cutters;

a holder for receiving and positioning said body member on said housing;

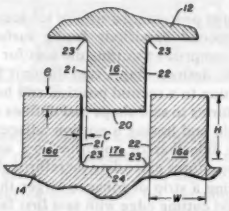
an annular support ring for supporting said holder on said arbor so that the teeth of said body member mesh with the grooves of said cutter whereby axial movement of said body member is prevented; and

means for aligning said body member so that the angular position of the teeth of said body member with respect to the grooved cutters is such that slit wire is readily extracted.

3,939,745
APPARATUS FOR SLITTING COIL STOCK

James E. Weeks; Charles J. Runkle; Bernhard T. Junker, and Gary E. O'Connor, all of Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 30, 1974, Ser. No. 519,173
Int. Cl.² B23D 19/06
U.S. Cl. 83—425.3 16 Claims



1. An apparatus for slitting metallic coil stock into multiple continuous lengths of small cross-sectional wire, comprising:

a rigid stationary housing;

a first arbor positioned in the upper portion of said housing;

a second arbor positioned in the lower portion of said housing and substantially parallel to said first arbor;

a first and a second monolithic cutter roll positioned in engaging relationship on said arbors, each roll comprising, a plurality of lands and grooves wherein the grooves are characterized by essentially vertical sides and a curved root, the ratio between groove width and said coil

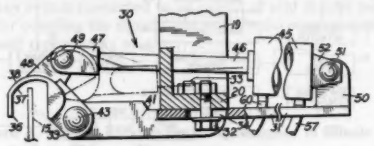
thickness being less than 5:1 and the spacing between the lands of said first roll and the groove roots of said second roll being a pre-determined distance so that during slitting fracture occurs in the shear mode.

3,939,746

SAW GUARD

Gary W. Rogers, Aloha; Leroy A. Tottie, Aberdeen; Vaughn G. Hamilton; Orville O. Goodwin, both of Pacific Beach, and Jean A. Baker, Hoquiam, all of Wash., assignors to Evans Products Company, Portland, Oreg.

Filed Oct. 16, 1974, Ser. No. 515,189
Int. Cl.² B27G 19/02; B23D 59/00
U.S. Cl. 83—544 5 Claims



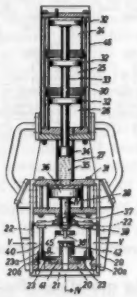
1. A saw machine having a work piece holder which moves the work piece into contact with a moving saw blade by relative motion of the holder and blade during a cutting cycle and which may be opened to replace the work piece during a work piece restocking cycle; a saw guard mounted on the leading edge of the work piece holder, means for holding the guard in a retracted position so that it does not shield the saw blade during said cutting cycle, and means to move the guard into shielding position adjacent the cutting edge of said saw blade during the time when the work piece holder is in said work piece restocking cycle.

3,939,747

PROFILE PRESS AND PRECISION CUTTING APPARATUS WITH A PRESSURE MULTIPLIER

Siegfried Harcuba, Saarbrucken, and Herbert Dits, Schmelz, both of Germany, assignors to Siegfried Harcuba, Saarbrucken, Germany

Filed Apr. 18, 1974, Ser. No. 461,994
Int. Cl.² B26F 1/02
U.S. Cl. 83—637 3 Claims



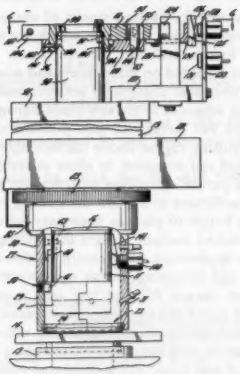
1. A profile press and precision cutting apparatus having a pressure multiplier for converting air pressure into oil pressure, said multiplier comprising an oil pressure-operated cylinder containing a piston having a piston rod to which is attached a cutting tool acting as a punch, wherein the improvement comprises a base plate, a cutting die assembly which rests on the base plate and is freely movable horizontally in all directions relative to the base plate, said base plate having a portion which at least partly surrounds the cutting die assembly, but is radially spaced therefrom in all directions, thereby accomodating free horizontal movement of the cutting die assembly in all directions relative to the base plate, and a plurality of guide rods which are rigidly connected to said piston rod and are parallel to the direction of travel of said piston rod, said guide rods extending into bores in the cutting die assembly and being long enough so that they extend into said bores throughout the entire stroke of said piston rod, to maintain the cutting die assembly in alignment with said piston rod during the cutting operation, irrespective of misalignment of the cutting die assembly with the base plate, thereby producing torsion-free guidance of the cutting tool and permitting the base plate to take up internally acting forces.

3,939,748

HYDRAULIC PUNCH PRESS WITH RAM ORIENTING MECHANISM

William B. Scott, Steward, and Roger V. Sawvell, New Milford, both of Ill., assignors to W. A. Whitney Corporation, Rockford, Ill.

Division of Ser. No. 274,391, July 24, 1972, Pat. No. 3,805,658. This application Feb. 13, 1974, Ser. No. 442,090
Int. Cl.² B26F 1/02
U.S. Cl. 83—639 9 Claims

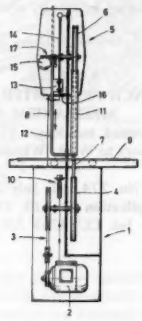


1. A punch press having a vertically reciprocable punch adapted to coact with an underlying die to punch a hole in an intervening workpiece, said press comprising a support, and upright cylinder mounted on said support, a piston slidable upwardly and downwardly within said cylinder, a ram projecting downwardly from said piston and out of the lower end of said cylinder and carrying said punch on its lower end, a rod rigid with the upper end of said piston and projecting upwardly through and journaled slidably in the upper end of said cylinder to help resist the lateral forces imposed on said ram when said punch engages said workpiece, and mechanism connected between said support and the projecting upper end portion of said rod for adjustably orienting the rod and the ram in a selected angular position within said cylinder and for thereafter anchoring the rod and the ram in said selected position.

3,939,749
BAND SAW

Ernst Müller, Balingen, and Alois Butz, Geislingen, both of Germany, assignors to Bizerba-Werke, Wilhelm Kraut KG, Germany

Filed May 5, 1975, Ser. No. 574,400
Claims priority, application Germany, May 27, 1974, 2425531
Int. Cl.² B27G *19/06, 3/00;* B23D *55/02*
U.S. Cl. 83—814 **12 Claims**



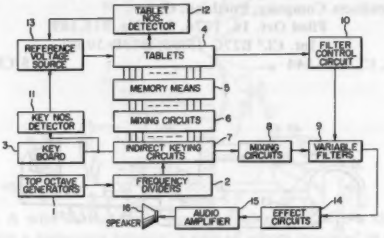
1. A band saw for cutting stocks of material such as bone and meat comprising a frame on which are supported spaced upper and lower rotatable wheels, a saw blade extending between and mounted on said wheels and adapted to be driven thereby, a feed table positioned between said wheels for supporting stock adjacent to the saw blade during a cutting operation, a guard rail having an idle position covering the saw blade in its cutting region above the feed table, support means for said guard rail mounted to allow movement of the guard rail (1) in a parallel direction with respect to said saw blade an amount sufficient to expose the cutting region of said saw blade to the height of passage necessary for cutting said stock and (2) a limited amount toward the cutting edge of the saw blade upon application of pressure of the stock against the guard rail, and actuating means operatively associated with said support means for moving said support means and thereby said guard rail upward in said parallel direction so as to expose said saw blade the necessary amount to allow cutting of the stock, said actuating means being responsive to the movement of said guard rail toward said cutting edge to move said support means and thereby said guard rail an amount sufficient only to expose said saw blade to the necessary height of passage of said stock.

3,939,750
ELECTRONIC ORGAN

Michihiro Inoue; Takeji Kimura, both of Hirakata, and Masaharu Sato, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 6, 1975, Ser. No. 555,731
Claims priority, application Japan, Mar. 6, 1974, 49-25964; Mar. 6, 1974, 49-25965
Int. Cl.² G10H *1/06*
U.S. Cl. 84—1.22 **18 Claims**

1. An electronic organ comprising
a. a reference voltage source,
b. at least one group of tablets for selectively passing the current from said reference source,
c. at least one group of memory means for separating the current which has passed through each of said tablets into a plurality of currents each with a predetermined different magnitude with respect to each other,
d. at least one group of first means for mixing selected currents from said memory means,
e. means for generating top octave waves,
f. a plurality of groups of means for dividing stepwise the frequency of the waves of each interval of said top octave waves,
g. a DC voltage source,
h. at least one keyboard consisting of keys for selectively passing the voltage from said DC voltage source,

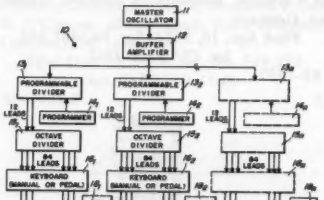


i. a plurality of indirect keying means each for modulating the current from each of said mixing means by the frequency-divided waves and selectively passing the modulated waves in response to the operation of each of said keys of said keyboard, and
j. at least one means for converting the waves of said indirect keying means into the musical sounds.

3,939,751
TUNABLE ELECTRICAL MUSICAL INSTRUMENT

Richard J. Harasek, Northbrook, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 16, 1974, Ser. No. 506,072
Int. Cl.² G10H *5/06*
U.S. Cl. 84—1.17 **5 Claims**



1. In an electronic musical instrument for playing scales including those with more than twelve tones per octave and those with unequal temperament, a master programmable unit comprising:
oscillator means for providing a fixed reference frequency signal; and
a plurality of individually programmable sections, each said programmable section having capability for producing twelve tones per octave independently of any other programmable section, and each including
at least twelve divider chains connected to said oscillator means for receiving said fixed reference frequency signal and for producing simultaneously a first twelve distinct signals from said reference frequency signal, the divisor number of each said divider chain being adjustable and the divisor number of one of said divider chains being

related to the divisor number of any second one of said chains by a factor greater than one and less than two,

program means connected to said frequency divider chain for changing the divisor numbers of individual chains to vary the frequencies of said first twelve distinct signals,

octave divider means connected to receive said first twelve distinct signals from said twelve divider chains and to produce therefrom at least a second twelve signals, each of the second twelve signals having a frequency related to the frequency of one of said first twelve signals by a multiple of two, and said octave divider means having an output for each of said second twelve signals,

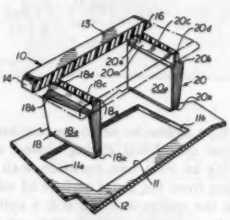
reproducing means for receiving and reproducing signals applied thereto, and having a multiplicity of output terminals, and

switching means having at least twelve key switches, each key switch connected to an output of said divider means, for coupling the signal from said divider means output to said reproducing means.

3,939,752
FASTENER STRUCTURE

Richard A. Koscik, Richton Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 23, 1974, Ser. No. 536,936
Int. Cl.² F16B *19/00*
U.S. Cl. 85—5 R **10 Claims**



1. A device for insertion into a bi-sided panel, comprising: a head portion, a pair of spaced apart prongs extending from said head portion for insertion through aperture means formed in said panel, at least one of said prongs including a body portion for passing completely through said panel from one side thereof, a shoulder portion extending transversely of said body portion to engage an opposite side of said panel when said prong is inserted therethrough, a neck portion extending between said head portion and said shoulder portion and of a length corresponding to the thickness of said panel, said neck portion having a tapering cross-section, when viewed in a plane parallel to said panel, from a thin neck edge to a thick neck edge for providing different degrees of flexure from the thin neck edge to the thick neck edge, whereby said neck portion will flex inwardly and twist arcuately about one neck edge inwardly of the periphery of said aperture means during assembly of the device with the panel for facilitating passage of the shoulder portion beneath the panel.

3,939,753
THREE AXIS COIL MAGNETIC MINESWEEPING SYSTEM

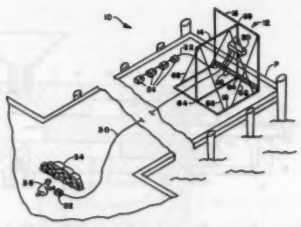
Jerry J. Rosborough, and William A. Rhyne, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 15, 1974, Ser. No. 470,256
Int. Cl.² B63G *7/06*
U.S. Cl. 89—1 M **4 Claims**

4. A method of sweeping magnetic influence mines that are directional in sensitivity and are of unknown orientation, said method comprising the steps of:

providing first, second, and third air core solenoid coils of large transverse dimensions compared with axial length and disposed in mutually orthogonal planes;

energizing said first air core solenoid coil for a first predetermined time period with alternating electrical current to generate a first magnetic field having a first principal axis;



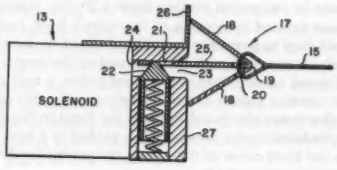
energizing said second air core solenoid coil for a second predetermined time period with alternating electrical current to generate a second magnetic field having a second principal axis perpendicular to said first principal axis; and

energizing said third air core solenoid coil for a third predetermined time period with alternating electrical current to generate a third magnetic field having a third principal axis perpendicular to each of said first and second principal axes.

3,939,754
OMNI-DIRECTIONAL WEAPON ARMING WIRE CONNECTION

John B. Dexter, California, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1974, Ser. No. 455,758
Int. Cl.² F41F *5/02*
U.S. Cl. 89—1.5 D **5 Claims**



1. A weapon arming wire connector for releasing a weapon having a fuse therein and

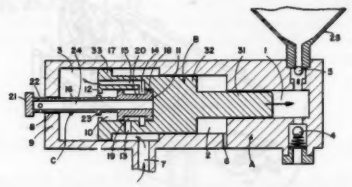
an arming wire one end of which is attached to said fuse, said connector comprising:

mechanical means, for attachment to the other end of said arming wire, having a central portion and two diverging legs on opposite sides of and joined to said central portion, each attached at one end to one end of said central portion, said central portion being of plate-like configuration and extending beyond the free ends of said legs which are opposite the attached ends, and having a hole therethrough also located beyond the free ends of said legs, said legs forming acute angles with the plane of said central portion and being integral therewith, the other end of the arming wire being attached to the connector near the junction between the central portion and the diverging legs.

3,939,755
LINEAR HYDRAULIC MOTOR

Hanani Tabor, Carmiel, Israel, assignor to Amiad Systems Limited, Khorazim, Israel

Filed Jan. 28, 1974, Ser. No. 437,102
Claims priority, application Israel, Mar. 5, 1973, 41682
Int. Cl.² F01L 15/12; F01B 7/18; F01L 23/00
U.S. Cl. 91—224 3 Claims



1. A linear hydraulic motor for operation by a liquid under pressure, comprising:

a stepped cylinder casing having: a front cover, a large bore portion in its front part closed by said front cover, a smaller bore portion in its rear part, and a liquid inlet in the rear of the large bore;

a differential piston unit reciprocable in the cylinder casing, said unit consisting of a large diameter front piston slidingly movable in the large bore portion, and of a smaller-diameter rear piston slidingly movable in the smaller-diameter bore,

said piston unit having a smooth central bore whose front end extends through the front end of the large-diameter piston whereat the bore diameter is narrowed by an inwardly projecting stop, and the central bore's rear end being within the confines of the smaller-diameter piston,

said central bore providing a first fluid communication path with said large-bore portion through a first port extending from the front end of the piston to a point distanced from the central bore's rear end, and a second port extending between a surface of the smaller-diameter piston and the central bore at a point situated to the front of the first port, and providing a second fluid communication path between the central bore and said liquid inlet,

a hollow spool valve adapted to slide in the central piston bore in reciprocal motion from a frontal position in the bore defined by contact of the valve's front end with the said stop to a rearward position defined by contact of the valve's rear end with the rear end of the central bore,

said spool valve comprising a front collar, a rear collar and an annular groove extending between the two collars, the valve being elongated towards the front in the shape of a cylindrical outlet tube which is guided in a bore provided in the front cover of the casing and protrudes through this cover to the outside,

an outer limit stop and an inner limit stop on said tube adapted to alternately contact the outer and the inner surfaces of the front cover, the outer stop being positioned on the tube so as to define, by its contact with the front cover, the rear limit of the piston stroke during the front position of the spool valve in the central bore, and the inner stop being positioned on the tube so as to define by its contact with the front cover, the front limit of the piston stroke during the rearward position of the spool valve in the central bore,

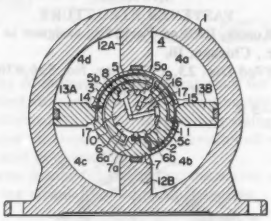
a central port in the spool valve opening at the rear end of the spool valve and extending through the outlet tube to a point short of the front end of this tube where it is in fluid communication with the atmosphere through at least one radial opening positioned to the rear of the outer limit stop,

disposition of said first and second ports in the piston unit being such that in the frontal position of the piston unit with the spool valve in its rear position, fluid communication is created between the liquid inlet and the large-bore cylinder through the first port, the annular groove and the second port, and that in the rear position of the piston unit with the spool valve in its frontal position, fluid communication is created between the large-bore portion and the atmosphere through the first port, the rear end of the central bore, the central valve port, and the radial opening at the end of the outlet tube.

3,939,756
ROTARY TYPE HYDRAULIC SERVO-MECHANISM

Youichi Saida, Kawasaki; Hajime Ito, Yokohama, and Kojiro Imanaga, Tokyo, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 319,019, Dec. 27, 1972, abandoned.
This application Sept. 5, 1974, Ser. No. 503,518
Claims priority, application Japan, Dec. 27, 1971, 47-742; Dec. 27, 1971, 47-743
Int. Cl.² F15B 9/10
U.S. Cl. 91—370 4 Claims



1. In a rotary type hydraulic servo-mechanism of the type including a hollow cylindrical casing closed at both ends thereof and having at least one partition wall radially and inwardly projecting from the inner surface of said casing and extending toward the center axis thereof; a cylindrical input shaft passing axially and concentrically through said casing; a driven output member rotatably mounted on said input shaft within said casing and having one end thereof extending out of the casing as an output portion, and having at least one partition wall radially and outwardly projecting from the outer periphery thereof and extending toward the inner surface of said casing; said partition walls of said casing and said output member defining therebetween at least one pair of hydraulic drive chambers; a servo-valve mechanism provided between opposed cylindrical sliding surfaces of said input shaft and said output member and comprising mutually opposed axial grooves formed in the cylindrical outer surface of said input shaft and in the cylindrical inner surface of said output member; first hydraulic fluid supplying and discharging passage means formed in said input shaft and connecting said grooves in said input shaft to a hydraulic fluid source and a fluid reservoir; second hydraulic fluid supplying and discharging passage means formed in said output member and connecting said grooves in said output member to said hydraulic drive chambers; and means for generating a counter-torque against a rotational force applied to said input shaft; the improvement wherein said means for generating a counter-torque comprises:

means positioned around said input shaft and comprising at least one pair of isolated hydraulic fluid reaction chambers which are hydraulically isolated from one another;

said reaction chambers being formed at a side of said input shaft diametrically opposite to said servo-valve mechanism and communicating with said second hydraulic fluid supplying and discharging passage means through passage means formed in said output member;

each of said reaction chambers being defined by a first radial face on a first radial wall formed on said input shaft and a second radial face on a second radial wall circum-

ferentially opposing the first radial face and formed on said output member;

said first and second walls having their radially outer and inner ends in sliding sealed engagement with the inner surface of said output member and with an outer surface of said input shaft, respectively;

said first and second radial faces having the same area; and

said pair of reaction chambers comprising a first reaction chamber for imposing to said input shaft a torque counteracting the rotation of said input shaft in a first circumferential direction, and a second reaction chamber for imposing to said input shaft a torque counteracting the rotation of said input shaft in a second opposite circumferential direction, whereby upon introduction of hydraulic fluid into one of said reaction chambers a reaction force is exerted on said input shaft against and relative to said output member for causing relative rotation between said input shaft and said output member.

3,939,757
FLUID POWER STEERING SYSTEM WITH VALVE OPERATOR CONTROL MEANS

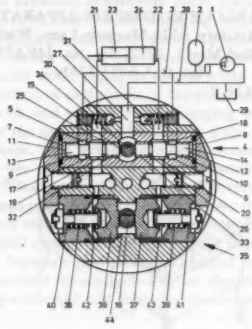
Erich Jablonsky, Bobingen, Rems, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed May 7, 1973, Ser. No. 357,601

Claims priority, application Germany, May 6, 1972, 2222332

Int. Cl.² F15B *13/10, 11/08, 13/04*

U.S. Cl. 91—391 R **4 Claims**



1. In combination with a power steering device adapted for a vehicle, having a servo motor (23–24) to which a fluid medium is supplied under an operating pressure for powered operation and a source (2) of said fluid medium under a storage pressure, a control valve (4) connected to said source, comprising a valve operator (15), two valve pistons (13 and 14) symmetrically engaging the valve operator and having opposed pressure faces continuously exposed to said storage pressure, conduit means (21 and 22) connected between the valve pistons and the servo motor for conducting flow of the fluid medium, said valve pistons being displaceable from a neutral position in which said flow of the fluid medium under said storage pressure is blocked and check valve means (30 or 31) responsive to depressurization of the source for conducting follow-up flow of the fluid medium to the servo motor through the conduit means in by-pass relation to the valve pistons, whereby mechanical operation of the steering device is enabled.

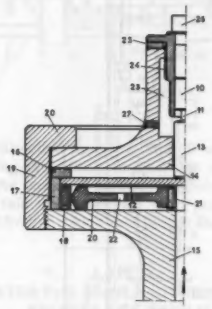
3,939,758
PRESSURE SENSOR

Jacques Faisandier, 32, Bd Felix Faure, Chatillon-sous-Bagneux 92, France

Filed Oct. 17, 1973, Ser. No. 407,210

Int. Cl.² F15B *21/04*

U.S. Cl. 92—1 **10 Claims**



1. A pressure sensor comprising:

chamber defining means, said chamber defining means including first and second cover members, each of said cover members having a planar surface, said planar surfaces being disposed parallelly in opposed facing relationship, said chamber defining means further comprising clamping means for mechanically maintaining said cover members in spaced apart relationship to define a housing having an internal chamber;

a yieldable diaphragm;

means supporting said diaphragm within said chamber, said diaphragm dividing the chamber into two portions, said supporting means defining a resilient seal for preventing leakage of fluid between said chamber portions;

first spacer means disposed in said chamber between said cover member facing parallel surfaces, said first spacer means extending on both sides of said diaphragm and contacting said first and second cover members to define the width of said chamber;

read out means coupled to said diaphragm, said read out means including a freely movable connecting rod having oppositely disposed end faces, said connecting rod being at least in part disposed in a first of said chamber portions with a first end face contacting a first side of said diaphragm only in the central area of said diaphragm;

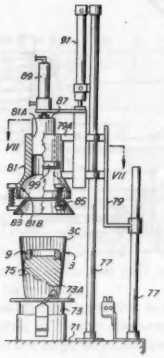
second spacer means positioned in the second of said chamber portions and extending radially outward substantially beyond the area of contact between the read out means connecting rod and said diaphragm, said second spacer means comprising a spacer member, said spacer member having a center aperture and contacting said supporting means about its periphery; shim means positioned in said spacer member center aperture, said shim means contacting and centering said spacer member and also contacting said diaphragm, said shim means determining the shape of said diaphragm in the absence of an applied pressure; and

means for delivering pressurized fluid to one of said chamber portions.

3,939,759
DEVICE FOR FORMING A SHAPED COVER FOR A FLASK

Carlo Brandigi, Tosi, Reggello, and Giuliano Fantechi, S. Ellero, Reggello, both of Italy (I-50060)

Division of Ser. No. 308,722, Nov. 22, 1972, Pat. No. 3,869,966. This application Oct. 8, 1974, Ser. No. 513,074
Int. Cl.² B31B *1/28*
U.S. Cl. 93—54.3 3 Claims



1. A device for forming a shaped cover, for a flask having a bottom, a side wall and a neck, from a skirt constituted by lengths of strip-like material having free end portions, said device comprising, in combination, a supporting body adapted to receive an inverted flask having a skirt engaged thereabout with the lengths of strip-like material extending along the exterior surface of its side wall with their free end portions extending upwardly beyond the flask bottom; means operable to center, relative to the flask bottom, an annular core, for forming a base of the cover, with such free end portions of the lengths of strip-like material extending upwardly beyond the annular core; an axially movable assembly including an inlet cup portion operative to engage such free end portions of the lengths of strip-like material to displace the same radially inwardly over the annular core to project radially inwardly from the inner periphery thereof; said assembly including means defining a cylindrical recess communicating with said inlet cup portion and coaxial with the annular core; means operable to feed laterally into said recess plug means engageable in the annular core; and piston means in said assembly displaceable axially to engage and displace the plug means axially inwardly from said cylindrical recess into engagement with the radially inwardly extending free end portions of the lengths of strip-like material to displace such free end portions axially inwardly over the inner periphery of the annular core and to force the plug means into the annular core to clamp the free end portions of the lengths of strip-like material between the plug means and the inner periphery of the annular core.

3,939,760
PERCOLATOR

John Littell Eaton, Jr., Delanco, N.J.; Richard Henry Brill, and Walter E. Myers, both of Philadelphia, Pa., assignors to SCM Corporation, New York, N.Y.

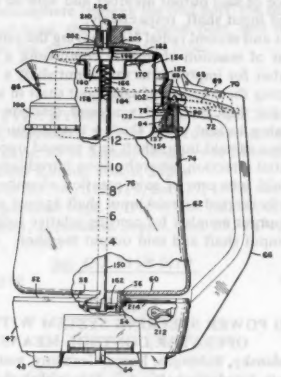
Filed Mar. 18, 1974, Ser. No. 451,336
Int. Cl.² A47J *31/00*
U.S. Cl. 99—312 12 Claims

9. A unitary tightening collar structure adapted to join two components, comprising:

a ring portion having a fixed inside and outside diameter;

expanding and contracting means adapted to provide an inside diameter for the tightening collar which can be varied from the inside diameter of the ring;

engaging means on said collar adapted to engage a component with the collar;

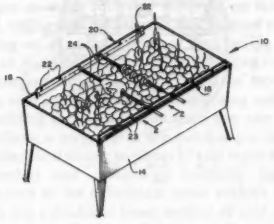


said engaging means on said collar coacting with said expanding and contracting means to cause a decrease in the inside diameter of the collar to less than the inside diameter of the ring.

3,939,761
BARBECUE ROTISSERIE APPARATUS

Clarence E. McGinty, 6226 Marjorie Lane, Wichita, Kans.

Filed May 1, 1972, Ser. No. 249,677
Int. Cl.² A47J *37/04*
U.S. Cl. 99—421 H 2 Claims



1. A barbecue rotisserie apparatus having a plurality of stations adapted to be mounted on the sides of a varying width cooking bed comprising:

a pair of longitudinal frame members having a plurality of longitudinally spaced slots for receipt and support of the individual skewers, the frame members adapted to be mounted on the side of said cooking bed;

a motor driven closed loop chain rotatably mounted on one of the frame members passing below each of said slots;

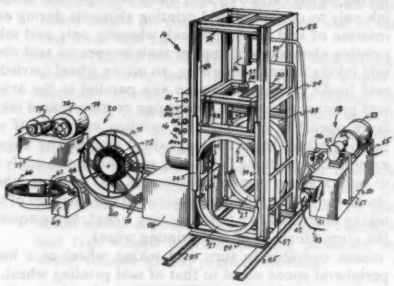
a plurality of multiple tine skewers, the tines having free ends, each skewer being removably positioned in one of said slots, gear means adjustably positioned longitudinally on each of the skewers in driving engagement with said chain and a removable support receptacle for each skewer having openings therein closed at one end for slidable receipt of the free ends of the skewer, the depth of the openings being sufficient to provide bending support for the tines and lug means for rotatably supporting the skewers.

3,939,762

APPARATUS FOR BUNDLING FIREWOOD

Stephen N. Smitherman, Loveland, and Lemuel A. Dougherty, Longmont, both of Colo., assignors to Big Elk Wood Corporation, Longmont, Colo.

Filed Oct. 7, 1974, Ser. No. 513,006
Int. Cl.² B65B 13/04
U.S. Cl. 100—4 13 Claims



1. An apparatus for bundling firewood, said apparatus comprising: a frame assembly; first wood engaging means fixed to said frame assembly and including a first wood pressing member engaging said firewood at only the outer portions thereof; second wood engaging means mounted on said frame assembly for movement in a predetermined path toward and away from said first wood engaging means, said second wood engaging means including a second wood pressing member engagable with said firewood at only the outer portions thereof so that movement of said second engaging means toward said first wood engaging means compresses a plurality of pieces of firewood positioned in said predetermined path between said first and second wood engaging means while not contacting the center portion of said pieces of firewood; actuating means connected with said second wood engaging means to cause movement of the same toward and away from said first wood engaging means, said actuating means causing a predetermined multi-ton pressure to be applied between said wood engaging means to compress firewood therebetween when said wood engaging means are brought toward one another; binding means mounted on said frame assembly for binding firewood at said central portion while said firewood is under compression between said first and second wood engaging means; and control means including an electrical system for controlling operation of said actuating means and said binding means.

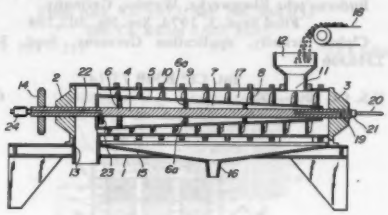
3,939,763

CONTINUOUS PRESS

Hachiro Sato, Tokyo, Japan, assignor to Fukoku Kogyo Company Limited, Tokyo, Japan

Filed Sept. 20, 1974, Ser. No. 508,012
Claims priority, application Japan, June 13, 1974, 49-67351
Int. Cl.² B30B 9/14
U.S. Cl. 100—93 S 3 Claims

1. A continuous press comprising: a substantially solid screw shaft, a screw drum disposed around said screw shaft to rotate therewith, a screw blade disposed helically around the outer surface of said screw drum, an outer drum arranged around said screw blade and having a number of small filtering holes, an inlet provided at one end of said outer drum, an outlet provided at the other end of said outer drum, means for heating said screw drum and screw blade through said screw shaft, said means for heating comprising: a supply conduit formed by a first bore in said screw shaft at one end thereof for introducing a heated fluid from said supply means into a space between said screw shaft and said screw drum and an exhausting conduit formed by a second bore in said screw shaft at the other end thereof for exhausting said fluid from said space to the outside, whereby raw materials to be pressed are introduced through said inlet into said space between said screw drum and outer drum, said space being gradually made



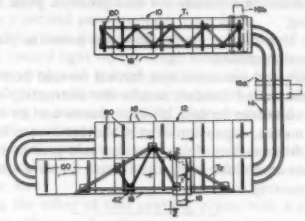
smaller in a direction from said inlet to said outlet, and said press including in addition at least one supporting ring for reinforcing the coupling between said screw shaft and said screw drum, said supporting ring being provided with at least one passage through which said heated fluid passes.

3,939,764

APPARATUS FOR MANUFACTURING WOODEN TRUSSES AND THE LIKE

Gerald M. McCormack, 3395 Fillmore St., Eugene, Oreg. 97405

Filed Sept. 20, 1973, Ser. No. 399,143
Int. Cl.² B30B 15/32
U.S. Cl. 100—100 31 Claims



1. Apparatus for embedding connector plates in the joints of wooden frame members to form trusses and the like, comprising:

a traveling press means movable along a trackway for pressing said connector plates into said joint, said press means having a self-propelled generally C-shaped rigid frame defining an open throat with upper and lower press platens mounted within said throat, one for movement toward the other,

a stationary jig table including a continuous planar panel-like, stationary tabletop of sufficient expanse to support multiple joints of said wooden frame members, said tabletop being positioned along said trackway and cantilevered generally horizontally from support means at one side of said table to define an unsupported open opposite side and open ends, said tabletop being at a level such that said open opposite unsupported side of said tabletop projects into said open throat between said upper and lower platens when said press means travels along said table,

said platens being sized to span substantially the full width of said jig table such that said platens can embed connector plates adjacent both opposite side edges of said tabletop while projecting over and under said tabletop from said unsupported side.

3,939,765

TRASH COMPACTOR

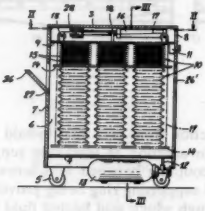
Anton Ladislaus Jung, Herborn; Manfred Lapczyna, Wetzlar; Peter Möws, Wetzlar; Gerhard Schmidt-Burbach, Wetzlar, and Heinz Strauss, Lohnberg, all of Germany, assignors to Buderus'sche Eisenwerke, Wetzler, Germany

Filed Sept. 3, 1974, Ser. No. 502,798

Claims priority, application Germany, Sept. 3, 1973, 2344366

Int. Cl.² B30B 15/14

U.S. Cl. 100—100 6 Claims



1. A trash compactor comprising:

a housing defining a compaction chamber provided with a ceiling and with access means for the introduction of uncompacted trash;

inflatable bladder means normally occupying a minor part of said chamber and bearing from below upon said ceiling;

a pressure plate in said chamber separated from said ceiling by said bladder means;

fluidic retraction means for said pressure plate above said ceiling;

flexible link means connecting said pressure plate to said retraction means;

a compressed-gas container carried on said housing; and

valve-controlled conduit means for alternately connecting said container to said bladder means and to said retraction means, expansion of said bladder means by gas pressure from said container forcing said pressure plate onto an accummulation of loose trash in said chamber for compacting same.

3,939,766

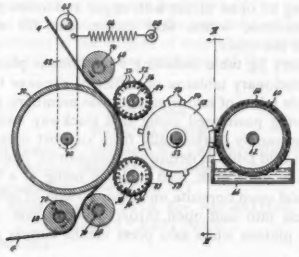
TEXTILE SHADE MARKER

Frank S. Darwin, 7005 Yorkshire, Knoxville, Tenn. 37919

Filed July 15, 1974, Ser. No. 488,308

Int. Cl.² B41L 47/46

U.S. Cl. 101—92 8 Claims



1. A textile shade marking device comprising:

a. a frame through which a width of fabric is moved continuously in one direction,

b. a printing wheel carried by said frame for rotation about an axis parallel to the plane of said cloth and transverse to said direction of travel, said printing wheel having a series of angularly spaced raised printing elements on its peripheral surface, and engaging said cloth,

c. driving means carried by said frame and operable to cause said printing wheel to turn at a peripheral linear speed equal to the speed of movement of said cloth,

d. inking means carried by said frame and operable to apply ink only to certain of said printing elements during each rotation of said printing wheel, whereby only said inked printing elements will imprint their images on said cloth, said inking means comprising, an inking wheel carried by said frame for rotation on an axis parallel to the axis of said printing wheel, and having one or more raised inking faces operable to engage the printing elements of said printing wheel as said inking wheel rotates, the angular extent of each inking face being such that it can apply ink to only a single printing element of said printing wheel, the linear circumferential spacing between certain of said inking faces, relative to said inking wheel, being equal to the circumference of said printing wheel,

e. means operable to turn said inking wheel at a linear peripheral speed equal to that of said printing wheel,

f. means operable to apply ink to the inking faces of said inking wheel, and

g. selector means operable to adjust said inking wheel to apply ink selectively to any of said printing elements.

3,939,767

APPARATUS FOR IMPRINTING SELECTED CHARACTERS ON A MOVABLE RECORD MEDIUM

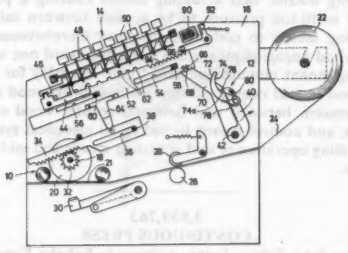
Dieter Belge, Schwenningen, Germany, assignor to Carl Valentin GmbH, Schloss Burgberg, Germany

Filed Feb. 28, 1974, Ser. No. 446,770

Claims priority, application Germany, Apr. 25, 1973, 2320792

Int. Cl.² B41J 11/18

U.S. Cl. 101—99 5 Claims



1. In a printing apparatus for printing characters on a printing medium, including a plurality of rotatable type wheels (20) each having a plurality of characters on the periphery thereof, drive means normally rotating said wheels through operating angles causing all of the characters thereon to be successively arranged in printing positions relative to said printing medium, and keyboard means for interrupting the rotation of the type wheels to positions in which selected characters thereon are in printing positions, respectively, relative to said printing medium; the improvement wherein said drive means comprises

a. common drive lever means including a plurality of pivotable drive levers (40) associated with said type wheels, respectively, and means (42) for simultaneously pivoting said drive levers between first and second positions, respectively; and

b. means connecting each of said type wheels with its associated drive lever, respectively, comprising

1. a toothed set wheel (32) coupled with the associated type wheel;
2. a longitudinally slidable rack (34) having teeth that engage the teeth of said set wheel;
3. a setting lever (70) pivotable at one end about an axis parallel with the pivot axis of said drive lever;
4. connecting rod means (52) associated with said keyboard means for connecting the other end of said setting lever with said rack; and
5. means (72, 80) resiliently connecting said setting lever with said drive lever, said connecting means being normally operable, upon pivotal movement of said drive lever from said first position to said second position, to rotate the associated type wheel through the aforementioned operating angle, whereby when all of the drive levers are pivoted from their first positions toward their second positions, displacement of said connecting rod means may be interrupted by said keyboard means at positions causing desired characters on said type wheels to be in printing positions, respectively, relative to said printing medium.

3,939,768

CHARACTER BELT APPARATUS WITH REPLACEABLE SLUGS FOR LINE PRINTER

Harold C. Medley, Los Gatos, Calif., assignor to Shugart Associates, Sunnyvale, Calif.

No Drawing. Filed Apr. 26, 1974, Ser. No. 464,472
Int. Cl.² B41J *1/20*
U.S. Cl. 101—111 **10 Claims**

1. Character belt apparatus for use on a line printer, comprising:

a flexible belt formed into an endless band;

a plurality of elongated slug mounting elements, each such mounting element including a body portion affixed to the outer surface of said belt and vertical registration means formed by at least one extremity of the elongated mounting element turned so that at least a terminal portion of said one extremity extends normal to said body portion and to the outer surface of said belt to define at least one horizontally extending vertical registration surface, said body portion having parallel side edges oriented transverse to the length of said belt to define a pair of horizontal registration surfaces;

a plurality of replaceable character slugs, each such slug including a front face on which on alphanumeric character is provided and a rear face having a recess extending vertically therealong to mate with and receive said body portion, the horizontal boundaries of said recess being formed by a pair of opposed spaced-apart vertically extending surfaces for engaging said horizontal registration surfaces to provide horizontal registration of said slug relative to said belt, each such slug also including at least one horizontally extending surface for mating with said vertical registration surface to provide vertical alignment of said slug relative to said belt; and

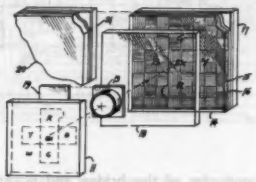
slug fastening means for securing each of said character slugs to corresponding ones of said mounting elements.

3,939,769

PROCESS FOR REPRODUCING A FULL-COLOR PICTURE IN TWO IMPRESSIONS

Leslie H. Lorber, Boston, Mass., assignor to Bernard Olcott, Weehawken, N.J.

Filed Aug. 13, 1973, Ser. No. 388,033
Int. Cl. B41m *1/20, 3/00*
U.S. Cl. 101—211 **12 Claims**



1. Process for reproducing a full color picture in two printing impressions, comprising the steps of:

a. Projecting a multi-color image upon a first panchromatic type film through a composite separation screen having first areas which pass long record light rays and attenuate short record light rays and second areas which pass short record light rays and attenuate long record light rays;

b. Projecting said multi-color image upon an ortho type film;

c. Developing said first panchromatic type film and said ortho type film;

d. Forming a first printing plate by said developed first panchromatic type film;

e. Projecting long record light rays through said developed ortho type film and said composite separation screen upon a second panchromatic type film;

f. Removing said developed ortho type film and projecting short record light rays through said composite separation screen upon said second panchromatic type film;

g. Developing said second panchromatic type film;

h. Forming a second printing plate from said developed second panchromatic type film;

i. Inking a selected one of said printing plates with a first ink and transferring therefrom a first ink image upon a substrate; and

j. Inking the other of said printing plates with a second ink and transferring therefrom a second ink image upon said substrate in registration with said first ink image.

3,939,770

SHORT RANGE PASSIVE ELECTROMAGNETIC DETECTOR

Paul H. Amundson, China Lake, Calif., and Prescott D. Crout, Lexington, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 22, 1971, Ser. No. 211,136
Int. Cl.² F42C *13/08*
U.S. Cl. 102—19.2 **1 Claim**

1. A short range low power passive detector having a portion thereof with a certain device-to-ground capacitance comprising;

a bridge circuit having arm portions;

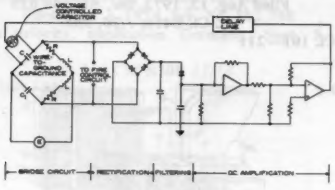
one arm of said bridge circuit comprising the devie-to-ground capacitance of said device;

additional capacitance connected in parallel with said first mentioned capacitance;

a feedback circuit connected across the output of said bridge circuit and having an output;

the output of said feedback circuit being connected to said additional capacitance means to adjust the additional capacitance means in response to unbalance in the bridge circuit caused by device-to-ground distance;

and delay means connected between the output of said feedback circuit and the additional capacitance means so that the device responds to rapid changes in capacitance



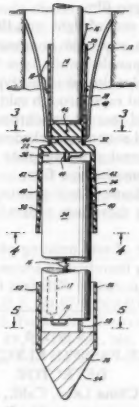
in said one arm of the bridge and is returned to null balance by relatively slower changes caused by changes in device to ground distance.

3,939,771

SEISMIC EXPLOSIVE CHARGE LOADER AND ANCHOR

Oliver B. McReynolds, P.O. Box 1235, Palestine, Tex. 75801

Filed June 3, 1974, Ser. No. 475,521
Int. Cl.² F42B *3/20*
U.S. Cl. 102—21.8 **6 Claims**



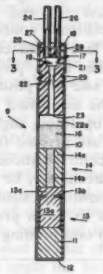
1. A seismic explosive charge loader comprising,
a first tubular member having an upwardly-facing, internal recess of sufficient diameter to loosely receive a loading means,
a second tubular member having a downwardly-facing internal recess and a side wall of sufficient internal diameter to fit about and to receive a generally cylindrical explosive charge container having an outwardly extending circumferential projection and an explosive charge container free of such a projection, and
a plurality of upwardly and inwardly tapered griping members on an internal wall of the side wall arranged to grip and hold sides of the container free of the circumferential projection,
the ribs being provided with an internally and circumferentially extending groove arranged to receive and grip the circumferential projection on the container having it.

3,939,772

BLASTING CAPS INITIATABLE BY THERMAL DETONATION ENERGY OF AN EXPLOSIVE GAS MIXTURE, AND BLASTING SYSTEM

David T. Zebree, Kingston, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 4, 1974, Ser. No. 512,267
Int. Cl.² F42B *3/10*
U.S. Cl. 102—22 **10 Claims**



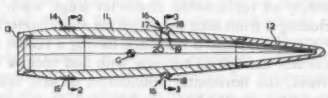
1. A nonelectric blasting cap assembly, which comprises,
a closed shell including an elongated closure member therefor, deformable for crimping described hereinafter, and an initiator charge within said shell ignitable in response to action of thermal detonation energy of an explosive gas mixture;
said closure member containing an open space substantially coaxial therewith including a cavity disposed intermediate its ends and a perforation extending from said cavity through one end of said closure into open communication with said initiator charge;
first and second conduits each extending within said closure member from the opposite end thereof in open communication with the outside of said shell and with said cavity, and in water tight relationship with said closure;
an explosive charge within said shell detonatable in operative response to ignition of said initiator charge; and
crimp means on the exterior of said shell extending through the shell wall around said perforation and then into said end closure member in support of said closure member and said shell in water tight relationship.

3,939,773

SPIN-STABILIZED PROJECTILES

Dennis H. Jenkins, and Luis Palacio, both of Newport, Vt., assignors to Space Research Corporation, Montreal, Canada

Continuation-in-part of Ser. No. 127,321, March 23, 1971, abandoned. This application Mar. 6, 1974, Ser. No. 448,565
Claims priority, application Sweden, Mar. 12, 1973, 7303390
Int. Cl.² F42B *13/00*
U.S. Cl. 102—93 **10 Claims**



1. A gun-fired spin-stabilized projectile having a longitudinally extending body, a driving band mounted on a rear portion of the body and being engageable with rifling in a gun barrel during firing to cause spin to be imparted to the projectile, said body tapering smoothly from a maximum diameter forwardly of the driving band to the forward end of the body, said tapering portion carrying a series of circumferentially

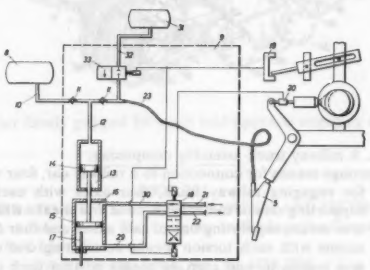
spaced apart, permanently fixed, radially-extending projections, each projection having an outer surface parallel to the longitudinal axes of the body and engageable with the wall of the gun barrel to center the forward portion of the projectile therein, and also being shaped to minimize air drag during flight of the projectile after firing, and the major part of the radial extent of the projections lying within the maximum diameter of the body.

3,939,774

APPARATUS FOR BONDING TOGETHER PIECES OF TRACK BALLAST

Josef Theurer, and Klaus Riessberger, both of Vienna, Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jan. 10, 1975, Ser. No. 539,947
Claims priority, application Austria, Jan. 17, 1974, 378/74
Int. Cl.² E01B *27/16*
U.S. Cl. 104—11 **5 Claims**



1. An apparatus for bonding together pieces of tamped ballast forming the bed of a track consisting of ties and rails fastened to the ties, comprising

1. a mobile track tamping machine having a frame mounted for mobility on the track,
2. a ballast tamping tool having an internal conduit ending in an opening for ejecting a liquid passing through the conduit under pressure,
3. a vertically movable carrier for the tamping tool mounted on the frame for moving the tamping tool between an upper position out of engagement with the ballast and a lower position wherein the tamping tool is immersed in the ballast for tamping thereof,
4. a storage container for a liquid bonding medium,
5. conduit means between the storage container and the internal conduit of the ballast tamping tool for delivering the liquid bonding medium from the container to the internal conduit,
6. a metering means for the liquid bonding medium arranged in the conduit means,
   a. the metering means consisting of a cylinder-and-piston device with an adjustable piston stroke, and
7. a pressure fluid operated drive for moving the piston of the device in response to the vertical movement of the tamping tool carrier.

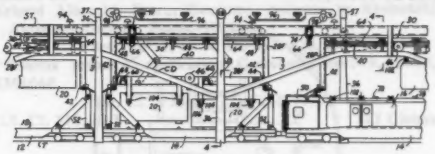
3,939,775

OVERHEAD TRANSFER CARRIER AND TRACKS

Leonard D. Barry, 19300 Pennington Drive, Detroit, Mich. 48221

Filed May 15, 1973, Ser. No. 360,527
Int. Cl.² B61K *1/00*
U.S. Cl. 104—18 **12 Claims**

1. In a container transfer system comprising a track, thereon having at least one container vehicle, a station track run above the track substantially parallel therewith for a distance, at least one container, a container carrier on said station track for loading and unloading said container onto said vehicle while moving therewith, said carrier having a first frame and a second frame, wheel means supporting said first frame on said station track, said second frame being a container lifting frame, guide means on said carrier for guiding said lifting frame parallel and in alignment with said first frame, the



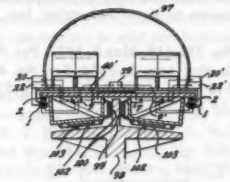
improvement being at least one cam wheel on said lifting frame, a cam track comprising at least one rail on which said cam wheel runs along side of and above the first said track and including a dip down and up for lowering and raising said lifting frame to set down and pick up said container from said vehicle.

3,939,776

RAILWAY TRUCK MAGNETIC SUSPENSION

James A. Ross, La Jolla, and Bert C. Harris, Foster City, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Continuation-in-part of Ser. No. 251,118, May 8, 1972, Pat. No. 3,886,871. This application Aug. 1, 1974, Ser. No. 493,688
Int. Cl.² B61F *5/04*, *5/52*; F16C *39/06*; F16F *6/00*
U.S. Cl. 104—23 FS **3 Claims**



1. An improved attractive magnetic suspension and vertical damping apparatus for providing an air gap spaced apart support between the bolster and side frame assembly and surface supported portions of the truck of a high speed vehicle comprising:

elongated ferromagnetic side frames carried by said surface supported portion;

air cushion support means positioned between said surface supported portions and the supporting surface;

elongated electromagnets having windings and carried by said bolster and side frame assembly portion, each of said electromagnets positioned below one of said ferromagnetic side frames in opposing spaced relation therewith for magnetic attraction therebetween; and

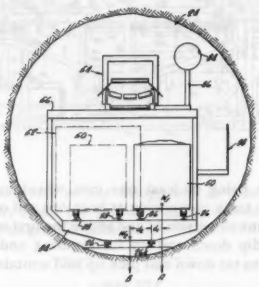
active control means for constantly varying the strength of the force fields of said electromagnets responsive to the length of said gap and to the vertical movement of the bolster and side frame assembly portion for maintaining a predetermined spaced gap relationship and damping control between said bolster and side frame assembly and surface supported poritons.

3,939,777

MOBILE TRACKWAY

Raymond D. Moran, 11607 E. Firestone Blvd., Norwalk, Calif. 90650

Continuation of Ser. No. 447,997, June 10, 1974, abandoned.
This application Jan. 24, 1975, Ser. No. 543,799
Int. Cl.² E21D 9/12; B61B 13/00; B65G 67/08; E02F 7/00
U.S. Cl. 104—137 28 Claims



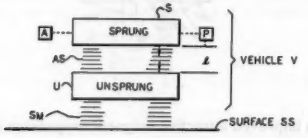
11. The mobile trackway of claim 1, in which said existing trackway is an existing railroad track, in which said carriage means has wheels adapted to roll on the rails of said existing railroad track, and in which said first and second trackway means respectively are first and second railroad tracks each adapted to have said wheels roll thereon, said first railroad track being laterally spaced from said second railroad track, the lateral spacing being sufficient to permit movement of said load-transporting cars on said first and second railroad tracks.

3,939,778

RAILWAY TRUCK MAGNETIC SUSPENSION METHOD

James A. Ross, La Jolla, and Bert C. Harris, Foster City, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Division of Ser. No. 251,118, May 8, 1972, Pat. No. 3,886,871.
This application Aug. 1, 1974, Ser. No. 493,689
Int. Cl.² B61F 5/04, 5/52; F16C 39/06; F16F 6/00
U.S. Cl. 104—148 MS 3 Claims



1. An improved method for providing non-contact support and vertical damping between the surface supported and bolster and side frame assembly portions of a vehicle comprising the steps of:

suspending without physical contact at a predetermined gap spacing said bolster and side frame assembly portion with respect to said surface supported portion by electromagnetic attraction therebetween;

sensing and producing therefrom an electrical output signal responsive to the acceleration of vertical movement of said bolster and side frame assembly portion of said vehicle with respect to a point fixed in free space;

sensing and producing therefrom an electrical output signal responsive to a change in the length of said predetermined gap; and

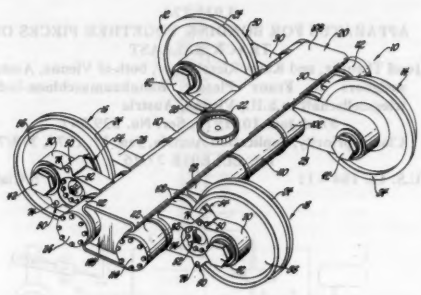
controlling the strength of said electromagnetic attraction to linearize the inverse relationship between said strength and said gap changes.

3,939,779

RAILWAY TRUCK ASSEMBLY

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 20, 1974, Ser. No. 534,674
Int. Cl.² B61D 15/00
U.S. Cl. 105—180 21 Claims



1. A railway truck assembly comprising;

carriage means for connection to a railway car, four wheels for engaging railway track, four axles with each axle supporting one of said wheels, four arm means with each arm means supporting one of said axles, and four torsion means with each torsion means connecting one of said arm means to said carriage means so that each of said wheels is independently rotatable and is movable relative to said carriage means independently of the other wheels, each of said arm means including inside and outside arms, one of said axles extending between the distal ends of each pair of said inside and outside arms and rotatably supporting one of said wheels between each pair of said inside and outside arms, one of said arms of each pair including brake shoe support means and brake shoe actuator means adjacent said brake shoe support means for urging a brake shoe supported by said brake shoe support means toward the adjacent wheel, said brake shoe support means including first and second retainer means disposed on opposite sides of each of said brake shoe actuator means for releasable connection to a brake shoe.

3,939,780

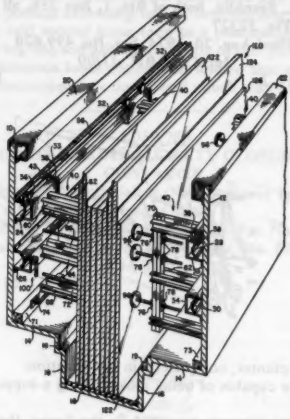
APPARATUS FOR SHIPPING FLAT GLASS WITHOUT PACKING CASES

Albert J. Bundy, Kingsport, Tenn., assignor to ASG Industries, Inc., Kingsport, Tenn.

Filed Oct. 9, 1974, Ser. No. 513,303
Int. Cl.² B61D 3/16; B65D 81/02
U.S. Cl. 105—367 5 Claims

1. An apparatus for shipping stacks of sheet glass comprising a container having a pair of parallel vertical walls and a substantially horizontal floor therebetween, a track secured to each of said walls extending horizontally lengthwise thereof, a pair of movable frames supported from each of said tracks, said frames being slidable with respect to their respective tracks for positioning at any one of a plurality of selected points therealong, at least one jack screw supported by and extending outwardly of each of said movable frames, each of said jack screws terminating in a glass engaging surface, the jack screws of that pair of movable frames supported by one of said walls having their glass engaging surfaces facing toward the glass engaging surfaces of those jack screws of the pair of movable frames supported by the other of said walls, threaded means on each of said movable frames in which said jack

screws are threadedly engaged whereby said jack screws may be adjusted to hold a stack of glass sheets resting on edge on



said floor firmly gripped between said opposed engaging surfaces.

3,939,781

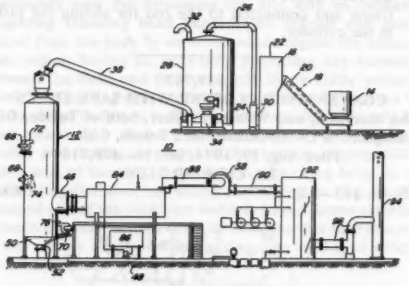
INCINERATOR, INCINERATION SYSTEM AND METHOD

Jack C. Adams, York, Pa., assignor to Ecologenics Corporation, Red Lion, Pa.

Filed May 30, 1974, Ser. No. 474,796

Int. Cl.² F23G *5/12*

U.S. Cl. 110—8 C **27 Claims**



1. A waste material incineration method including the step of:

a. comminuting said waste material to a predetermined size;

b. inserting said comminuted waste material to a vertically extending incinerator; and

c. applying a pressure differential to said incinerator throughout said vertical extension of said incinerator to control a flow rate of said comminuted waste material combustion gases through a plurality of vertically contiguous zones within said incinerator to provide spontaneous combustion of said comminuted waste material within said incinerator.

12. An incinerator for combusting waste material, comprising:

a. waste material combustion means forming a vertically extending enclosed chamber having a plurality of vertically contiguous combustion zones; and,

b. means for applying a predetermined pressure differential across said contiguous combustion zones within said combustion means for controlling a flow rate of said combusting waste material through said combustion zones to provide spontaneous combustion of said waste material within said combustion means.

3,939,782

FLUIDIZED FURNACE CONSTRUCTION FOR BURNING PARTLY DEHYDRATED SLUDGE

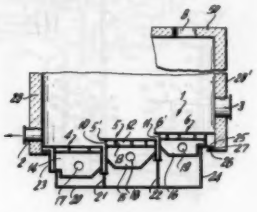
Erhard Albrecht, Essen, Germany, assignor to Rheinstahl Aktiengesellschaft, Essen, Germany

Filed Nov. 1, 1974, Ser. No. 520,207

Claims priority, application Germany, Nov. 9, 1973, 2356060

Int. Cl.² F23G *5/12*; F26B *17/00*

U.S. Cl. 110—8 F **12 Claims**



1. A fluidized bed furnace for burning partly dehydrated sludge, comprising a furnace housing having a bottom forming a fluidized bed support, side walls extending upwardly from said bottom and above the fluidized bed and defining a combustion chamber above the fluidized bed, an inlet for sludge on one side of said housing extending through said side walls, a discharge for the sludge on the opposite side of said housing extending outwardly through said side walls, said bottom comprising a plurality of step portions arranged at distinct elevations in descending order from said inlet to said discharge, and means for directing air upwardly through said step portions for maintaining a vertical operation of said bed and for supporting combustion in said combustion chamber.

3,939,783

FURNACE FOR INCINERATING WASTE MATERIALS

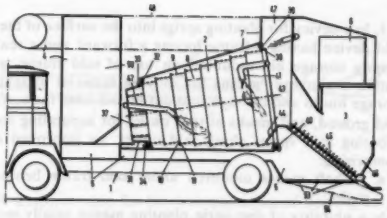
Michel Georges Jean Picard du Chambon, Versailles, France, assignor to B. V. Peximac, Netherlands, Netherlands

Filed Sept. 23, 1974, Ser. No. 508,355

Claims priority, application France, Sept. 28, 1973, 73.34778

Int. Cl.² F23G *5/06*

U.S. Cl. 110—14 **10 Claims**



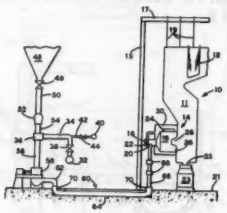
1. A furnace for incinerating waste materials which comprises:

a stationary casing;

a frusto-conically shaped grate mounted for rotational movement within said casing; said grate formed by a plurality of cylindrically-shaped, juxtaposed rings, said rings having radially and outwardly extending face members including orifice means for joining adjacent face

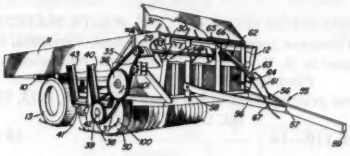
members for expansion by pins, each ring member being formed of a plurality of overlapping subsections; and means for rotating said grate.

3,939,784
FUEL CONDUIT
Kenneth Brandby, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Oct. 31, 1974, Ser. No. 519,445
Int. Cl.² F23K 3/02
U.S. Cl. 110—104 R 3 Claims



1. In combination with a fuel firing system comprising fuel supply and burner means spaced from one another, conduit means for conveying the fuel from the supply to the burner means, a rigid floor disposed below said supply and burner means, the floor being formed with trench means defining at least a portion of said conduit means, and said trench means being covered by detachable plate means.

3,939,785
SPRIG PLANTING APPARATUS
Willard W. Duffy, Rte. 1, Box 33, Okarche, Okla. 73762
Filed Mar. 18, 1974, Ser. No. 451,752
Int. Cl.² A01C 11/00
U.S. Cl. 111—3 16 Claims



1. In a device for planting sprigs into the surface of the earth said device having a frame having a forward and a rear end, a sprig storage bin mounted on top of said frame, a sprig outlet, a conveyer means for moving material in said sprig storage bin to and through said outlet and onto the surface of said ground, and means at said outlet for separating and distributing said sprigs along said outlet, an improved device comprising:

a. a shaft means mounted under said frame behind said outlet;

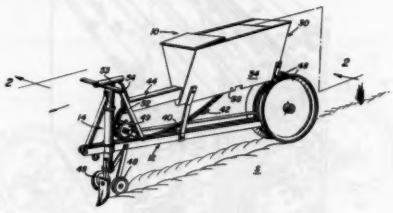
b. a plurality of disc sprig planting means axially mounted to and spaced along said shaft means by a distance substantially equal to the width of said outlet to roll said sprigs into said ground;

c. wheel support means mounted behind said shaft and journaled to the rear end of said frame;

d. draw bar means attached to the forward end of said frame; and

e. means on said device for controlling penetration of said disc sprig planting means into said surface of the earth.

3,939,786
SELF-PLANTER
George L. Greene, Rte. 1, Box 362; Sylvester A. Williams, and Freddie L. Franklin, both of Rte. 1, Box 356, all of Crawfordville, Fla. 32327
Filed Aug. 20, 1974, Ser. No. 499,020
Int. Cl.² A01C 11/00
U.S. Cl. 111—3 10 Claims



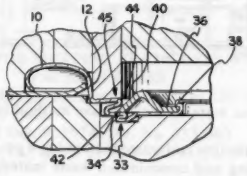
1. A self-planter, comprising, in combination:

a. a frame capable of being moved along a supporting surface;

b. planting elements mounted on the frame, the elements including a furrow opener, setter, and packing wheels; and

c. projector means mounted on the frame for sequentially forcing plants into the ground, the projector means including a cylinder having a pair of open ends, a piston slidably disposed in the cylinder, a rod connected to the piston and arranged extending out one of the ends of the cylinder, the other of the ends of the cylinder being restricted to form a plant holding device, an opening provided in the cylinder for permitting a plant to pass into the cylinder between an extreme position of the piston and the other of the ends, and actuator means mounted on the frame and connected to the rod for sliding the piston in the cylinder.

3,939,787
CONVENIENCE CLOSURE WITH SAFE EDGES
John Morrison, and William F. Elser, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 19, 1974, Ser. No. 498,710
Int. Cl.² B21D 51/26
U.S. Cl. 113—121 C 1 Claim



1. A method for forming a metallic closure from a closure blank having a central panel and a perimetrical upstanding wall portion which comprises the steps of:

forming an upper and a lower ledge, connected by a wall portion, in said perimetrical upstanding wall portion;

bending the outer margin of said central panel to form a first loose loop;

scoring an endless severing line in said lower ledge;

bending said upper ledge and said wall portion connecting said upper and lower ledges to form a second loose loop;

folding said first loose loop into abutting relationship with said lower ledge to form a continuous three-layer panel fold having a projecting nose portion, said projecting nose

portion being positioned below said severing line essentially in vertical alignment with said severing line;

fixing a pull tab to said central panel, said pull tab having a nose portion extending to said severing line; and

folding said second loose loop to a position overlying said severing line and said nose portion of said pull tab to form a continuous loose chuck wall fold so that said severing line lies completely under said chuck wall fold.

3,939,788

METHOD OF MAKING A SAFETY CLOSURE FOR A CONTAINER

Seth R. Schneible, South Salem, N.Y., assignor to Eyelet Specialty Co., Inc., Wallingford, Conn.

Division of Ser. No. 414,448, Nov. 9, 1973, Pat. No. 3,892,326. This application Nov. 11, 1974, Ser. No. 522,890

Int. Cl.² B65D *55/02*

U.S. Cl. 113—121 A 5 Claims

5. The method of making a self-locking safety closure for a dispensing container having a threaded neck to be closed by a threaded cap, which comprises selecting a container having a body and a reduced neck part with threads at a region predominantly near the dispensing end and with an outwardly projecting retaining bead beneath the threads and axially spaced from the body by an intermediate region, the intermediate region having an outwardly projecting key formation between the bead and the body, selecting a stiffly yieldable plastic locking ring with a splined bore sized to fit between the bead and the body and to non-destructively interfere with the bead, selecting a threaded cap compatible with the neck threads and having one-way ratchet-locking engageability with a part of the ring, the direction of locking being in the unthreading direction, and axially assembling the ring over the threaded end of the neck part and into keyed detent retention between the bead and the body by using the threaded advance of the cap to axially drive the ring into its keyed detent-retained position.

3,939,789

DOUBLE-ACTING PNEUMATIC SYSTEM FOR INDUCING MOTION IN A FLOATING VESSEL

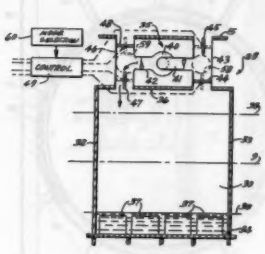
Edward O. Anders, Houston, Tex., assignor to Global Marine, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 183,466, Sept. 24, 1971, Pat. No. 3,850,125. This application Mar. 14, 1974, Ser. No. 450,994

Int. Cl.² B63B *43/06*

U.S. Cl. 114—40 4 Claims

1. An improved vessel for use in ice-covered waters comprising a hull, a motion inducing tank disposed in the hull at a location spaced from the hull even-keel center of buoyancy, port means for communicating the lower extent of the tank to the exterior of the hull below the load waterline for flow of water into and out of the tank in response to pressure in the tank being different from ambient pressure outside the hull, the tank extending vertically in the hull from a lower end located below the hull load waterline to an upper end located above said waterline substantially as far as the location of said port means below said waterline, and air flow means coupled to the upper extent of the tank and operable alternately for generating superatmospheric and subatmospheric air pressure in the tank, the airflow means including an air pressurizing device having a suction connection and a discharge connection, duct means for coupling the suction connection separately to the upper extent of the tank and to atmosphere and for coupling the discharge connection separately to the upper extent of the tank and to atmosphere, and valve means in the duct means operable between



a. a first state in which
   1. the suction connection is coupled to the tank and
   2. the discharge connection is coupled to atmosphere thereby to generate subatmospheric pressure in the tank, and

b. a second state in which
   1. the suction connection is coupled to atmosphere and
   2. the discharge connection is coupled to the tank thereby to generate superatmospheric pressure in the tank.

3,939,790

TRANSPORT SHIP CONSTRUCTION AND METHOD OF LOADING FLOATING CARGO INTO A FLOATABLE CARGO SPACE OF A SHIP

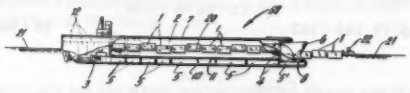
Günter Varges, Emden, and Franz Graalmann, Leer, both of Germany, assignors to Rheinstahl Aktiengesellschaft, Germany

Filed Mar. 13, 1973, Ser. No. 340,812

Claims priority, application Germany, Mar. 23, 1972, 2214177

Int. Cl.² B63B *35/40*

U.S. Cl. 114—43.5 VC 35 Claims



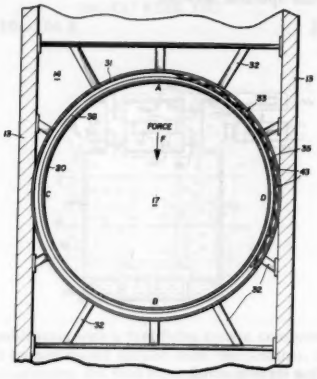
1. A transport ship for the transportation of floating cargo such as a buoyant container, particularly barges, comprising a ship's hull having at least one vertically undivided plural tier cargo space with means in said cargo space for stowing containers in a plurality of tiers one above the other, said cargo space being capable of being flooded to float the cargo therein and to be drained and being communicable with the open sea to permit the floating in of buoyant cargo, said floating cargo being vertically movable within said cargo space from the level of the lowermost tier to the uppermost tier by flotation upon variations of the level of the water in the cargo space.

3,939,791

LATERAL SUPPORT OF AN LNG SHIP TANK USING FLEXIBLE BRACING

Elmer Weyman Rothrock, Hinsdale, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Sept. 23, 1974, Ser. No. 508,280
Int. Cl.² B63B 25/16
U.S. Cl. 114—74 A 7 Claims



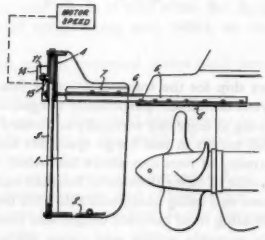
1. In combination:
a ship having a hold with a bottom,
a vertically positioned tank with a top and bottom standing in gravity support on the hold bottom, said tank having a portion circular in horizontal section between the tank top and tank bottom,
a circular restraining wall horizontally positioned around the tank, and equally spaced from, the circular portion of the tank, and
a plurality of pairs of flexible cross-braces fixedly joined substantially tangentially to the circular portion of the tank and extending therefrom and fixedly joined to the circular restraining wall, said cross-braces accommodating expansion and contraction of the tank with temperature change while providing support against lateral movement of the tank during pitching and rolling of the ship.

3,939,792

VERTICALLY LIFTABLE RUDDER BLADE

Reidar Wasenius, Signalveien 6, 1500 Moss, Norway

Filed June 25, 1974, Ser. No. 482,994
Claims priority, application Norway, June 26, 1973, 2639/73
Int. Cl.² B63H 25/06
U.S. Cl. 114—162 10 Claims



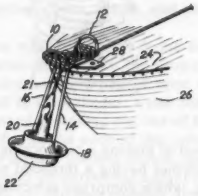
1. The combination comprising
a motor for a boat, said motor having a propelling means which produces a slipstream as the boat moves through the water,
a rudder for steering the boat at speeds below a predetermined speed,
means independent of the boat mechanically coupling the rudder to the motor propelling means so that the rudder is in a position to react to the slipstream produced by the propelling means and both turn together as the boat is steered,
and means on said rudder responsive to the movement of the water at said predetermined speed and above lifting the entire rudder up in the water and out of the slipstream when the boat has reached said predetermined speed to make the steering of the boat substantially independent of the rudder.

3,939,793

ANCHOR BRACKET AND CLEAT

Norman D. Brockelsby, Grand Island, Nebr., assignor to Dutton-Lainson Company, Hastings, Nebr.

Filed Feb. 7, 1975, Ser. No. 547,862
Int. Cl.² B63B 21/22
U.S. Cl. 114—210 7 Claims



1. An anchor bracket and cleat comprising, in combination:
support member means including first and second parallel, spaced rods;
first and second opposed spaced ring means joined to the support member means, said ring means being inclined in opposite directions and spaced from each other to form a cleat, said ring means including openings for guiding a line;
means for attaching the ring support member means to a deck surface; and
an extension of said support member means, including first and second diverging rod extensions of said first and second rods, respectively, said rod extensions connected to a support collar member, being spaced from said ring means to form a separate anchor support, whereby an anchor may be retained by the collar member.

3,939,794

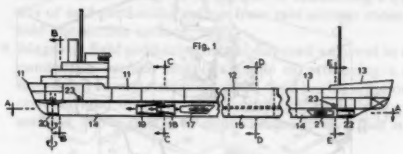
MARINE PUMP-JET PROPULSION SYSTEM

Francis R. Hull, 567 E. 26th St., Brooklyn, N.Y. 11210

Continuation-in-part of Ser. Nos. 814,475, Feb. 17, 1969, Pat. No. 3,620,183, and Ser. No. 182,760, Sept. 22, 1971, Pat. No. 3,779,200. This application Sept. 25, 1973, Ser. No. 400,659
Int. Cl.² B63H 11/02, 25/46
U.S. Cl. 115—16 4 Claims

1. A marine propelling device to facilitate ahead-and-astern propulsion comprising a reversible hydraulic-jet ejector structure extending longitudinally within the hull of a marine vessel and disposed below the normal waterline; said reversible ejector structure being bounded by sidewalls of a longitudinal open-channel conduit formed by downwardly depending chines or keels from the hull structure of said marine vessel; oppositely-directed thrust-augmenting secondary-nozzle ejector stagings centrally disposed in said open channel conduit to discharge towards their respective adjacent propelling end of said ejector structure; each ejector staging having a ducted

axial pump disposed within said open-channel conduit to supply high-velocity motive fluids into the central bore of at least one adjacent secondary-nozzle member; the inlet casing of each ducted axial pump being disposed to admit pump



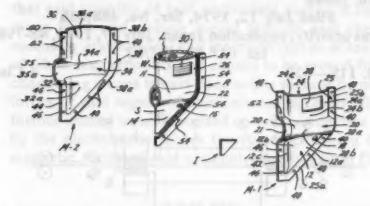
suction fluids from the direction of positive differential pressure when underway and the outlet casing of each ducted axial pump being disposed to discharge high-velocity motive fluids therefrom.

3,939,795

OUTBOARD MOTOR PROTECTIVE COVER

Arthur J. Rocka, Rte. 1, Box 276, Tomball, Tex.

Filed June 3, 1974, Ser. No. 475,864
Int. Cl.² B63H 21/26
U.S. Cl. 115—17 7 Claims



1. An apparatus for protecting an outboard motor, which motor includes a skeg, a propeller shaft housing for a propeller shaft and a propeller, comprising:

a. first cover member means for enclosing and covering a first portion of the outboard motor;

b. second cover member means for enclosing and covering a second portion of the outboard motor;

c. said first and second cover member means enclosing and covering the skeg and propeller shaft housing of the motor and each having a recess formed therein for passage of the propeller shaft for connection with the propeller, said first and second member means each comprising:

1. a lower cover portion for enclosing and covering the skeg; and

2. an intermediate cover portion for enclosing and covering the propeller shaft housing;

3. a rear collar formed on said intermediate cover portion adjacent said recess for forming an opening for passage of the propeller shaft therethrough wherein the propeller is external of said first and second cover member means;

d. said first and second cover member means being formed from a solid member and in substantial conformity to the portions of the outboard motor enclosed and covered thereby for reducing impairment of the hydrodynamic flow characteristics of the outboard motor; and

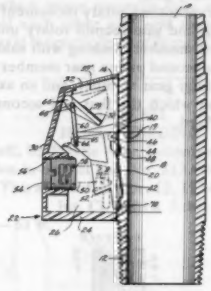
e. coupling means for connecting said first cover member means and said second cover member means together to enclose the covered portions of the outboard motor therein.

3,939,796

APPARATUS FOR VISUALLY INDICATING WHEN A POOL FILTER IS DIRTY

Clarence G. Smith, Pomona, and Richard O. Lightfoot, Pacific Palisades, both of Calif., assignors to Muskin Corporation, Colton, Calif.

Filed Sept. 27, 1974, Ser. No. 510,004
Int. Cl.² B01D 35/14
U.S. Cl. 116—114 PV 2 Claims



1. Apparatus for indicating when a swimming pool filter needs to be cleaned, comprising a conduit member adapted to be connected to the inlet side of a pool filter for directing water into the filter, the conduit having an opening along the side, means projecting around the opening forming a flat surface, a diaphragm of flexible material in contact with said surface and extending across the opening, housing means covering the diaphragm and clamping the diaphragm against said surface, a piston member movably supported in the housing means, the piston member having a surface engaging the diaphragm, spring means urging the piston surface and diaphragm toward the conduit against the pressure exerted against the diaphragm by water in the conduit, the housing means having a window therein, a pivoted flag positioned adjacent the window, and linkage means connecting the piston means to the flag for moving the flag in response to movement of the piston means, the flag being movable between a position viewable through the window and a position out of view through the window, the linkage means moving the flag into the viewable position when the piston means moves against the urging of the spring a predetermined distance, the piston means including a hinged member extending across said opening with one side in contact with the diaphragm, the linkage means being pivotally connected at one end to the flag means and at the other end to the hinged member, the linkage means including lost motion means for allowing the hinged member to move a predetermined distance before it begins to move the flag through the linkage means.

3,939,797

ROTARY MEASURING INSTRUMENTS USING INCH OR METRIC SCALE

Cyril William Medhurst, Weybridge, England, assignor to British Aircraft Corporation Limited, London, England

Filed June 28, 1974, Ser. No. 484,291
Claims priority, application United Kingdom, June 30, 1973, 31282/73
Int. Cl.² B23Q 17/00
U.S. Cl. 116—115.5 7 Claims

1. A rotary instrument for selectively indicating measurements in English and Metric units and suitable for use with apparatus having a shaft whose rotational movement is proportional to a linear movement to be measured by the instrument, including in combination,

a first rotary unit adapted to be secured to the shaft,

a secondary rotary unit rotatable with respect to the first rotary unit,

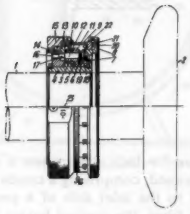
a first external annular gear member fixed to said first rotary unit,

a second external annular gear member fixed to said second rotary unit and co-axial with said first gear member,

an annular scale member, on which a single continuous scale is formed, carried by said second rotary unit,

an annular stationary unit,

a drive unit for transmitting rotary movement between said first rotary unit and said second rotary unit including a first pinion gear member meshing with said first annular gear member, a second pinion gear member meshing with the second annular gear member, and an axially shiftable stub shaft upon which the first and second pinion gear members are fixed,



location means to anchor the stub shaft selectively to the stationary member, wherein a drive ratio which corresponds to or bears a simple relationship to the ratio between English and Metric units of length is provided between said first and said second rotary unit, or to the second rotary unit, wherein a 1:1 gear ratio is provided between said first and said second rotary unit,

gear ratio shift means, operatively associated with said stub shaft, and

co-operating means mounting said shift means on said stationary member such that rotation of said shift means effects axial translation of said stub shaft from a position anchored to said stationary unit to a position anchored to said second rotary unit, and

two spaced marks formed upon said shift means against which the continuous scale can be read, the marks being so spaced that when the stub shaft is anchored to said stationary unit only one mark is visible to an operator and when the stub shaft is anchored to said second rotary unit only the other mark is visible.

3,939,798

OPTICAL THIN FILM COATER

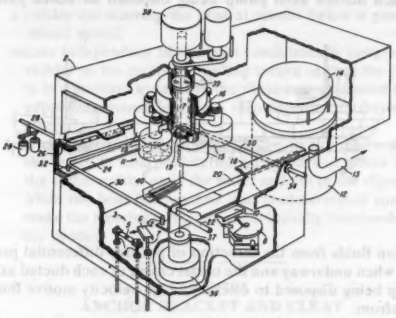
Dale E. Morton, Farmers Branch, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1974, Ser. No. 534,327

Int. Cl.² B05C *11/02*; C23C *13/12*

U.S. Cl. 118—7 **8 Claims**

1. An optical thin film deposition system comprising a vacuum chamber, evaporative deposition means within said chamber, reactive plasma deposition means within said chamber, chemical vapor deposition means within said chamber, a movable substrate support means within said chamber, and means for selectively activating the evaporative deposition means, the reactive plasma deposition means, and the chemical vapor deposition means whereby thin films are deposited upon a substrate by evaporative deposition, RPD, and CVD in



any sequence or in combination without removal of the substrate between deposition of layers.

3,939,799

MAGNETIC FORCE SEALANT FOR PLATING TANK

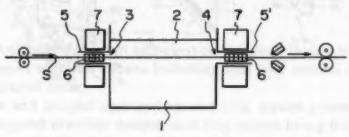
Shigeo Kanbara, Yokohama, and Takeshi Adaniya, Fukuyama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed July 12, 1974, Ser. No. 488,056

Claims priority, application Japan, July 17, 1973, 48-79812

Int. Cl.² B05C *5/02*

U.S. Cl. 118—620 **4 Claims**



1. A molten metal plating apparatus comprising: two electrodes arranged within a chute at each of a feeding and discharging ends of a plating tank in parallel with the side edges of a strip to supply a flow of current in the direction of the width of said strip; and a magnet arranged on the outside of each of said chutes to apply a magnetic field substantially over the whole area of said chute in the direction of the thickness of said strip, whereby on simultaneous application of said current and magnetic field a magnetic force is developed which is directed inwardly with respect to said tank and whereby the amount of leakage of said molten metal through each of said chutes at said strip feeding and discharging ends is controlled to zero or to a desired value by suitably adjusting the amount of said current or the intensity of said magnetic field.

3,939,800

APPARATUS AND PROCESS FOR DEPOSITING ELECTROSTATICALLY AND MAGNETICALLY RESPONSIVE PARTICULATE MATTER ON A CONDUCTIVE SURFACE

Harold J. Banker, Bethel Park, Pa., assignor to Pram Inc., Wilmerding, Pa.

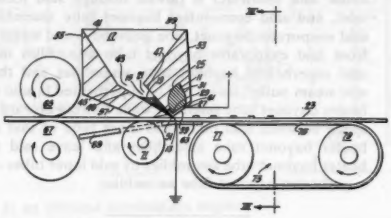
Filed July 23, 1974, Ser. No. 490,969

Int. Cl.² B05B *5/02*; G03G *15/08*

U.S. Cl. 118—636 **11 Claims**

1. Apparatus for depositing electrostatically and magnetically responsive particulate matter comprising:

a. A conductive surface bearing a latent electrostatic image;
b. Storage means for storing electrostatically and magnetically responsive particulate matter;
c. Channeling means that is disposed adjacent to said conductive surface and that is capable of channeling a quantity of said particulate matter from said storage means to said conductive surface; and,
d. Magnetic field producing means disposed adjacent to said conductive surface that is capable of producing a distorted and asymmetrical magnetic field having a region of concentrated magnetic flux permeating said conductive surface, and a region of dilute magnetic flux that is inclined and adjacent to said conductive surface; said distorted and asymmetrical field being oriented with respect to said conductive surface and said channeling means so that said quantity of said particulate matter is caused to move from said storage means through said channeling means by gravitational and magnetic forces of said region of dilute magnetic flux and caused to be moved from said channeling means to said conductive surface by magnetic forces of said region of concentrated magnetic flux, and further caused to be deposited on said conductive surface by the electrostatic forces thereon overcoming the said magnetic forces of said concentrated magnetic flux.



3,939,801

MAGNETIC BRUSH DEVELOPING APPARATUS

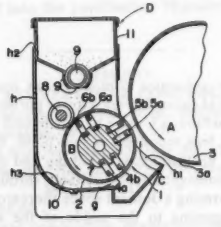
Susumu Tanaka, Sakai; Yuji Enoguchi, Osaka, and Hidetoshi Kawabata, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 23, 1974, Ser. No. 500,169

Claims priority, application Japan, Sept. 10, 1973, 48-106098[U]; Oct. 26, 1973, 48-124143[U]

Int. Cl.² B05B 5/02

U.S. Cl. 118—637 **7 Claims**



1. In a magnetic brush developing apparatus for use in an electrophotographic copying apparatus which has a housing, and a developing roller rotatably provided adjacent to and in close spaced relation to a movable photoreceptor surface on which an electrostatic latent image on an original to be copied is formed, said developing roller including a rotatable outer cylinder and magnet means fixedly enclosed in said outer cylinder and disposed in such a position that the magnetic field of said magnet means intersects said cylinder to form magnetic brush bristles of developing material on said outer cylinder for developing said latent image into a visible toner powder image, the improvement in which, for forming soft magnetic brush bristles on said outer cylinder to maintain uniform quality of copied images, said magnet means comprises a pair of stationary magnets directed with the same polar orientation toward the photoreceptor surface and disposed in parallel to and at a distance from 5 to 20 mm from each other, said distance providing a space between said two magnets in which space magnetic lines of force of said two magnets repel each other with said space almost free from influence of said magnetic lines of force of said two magnets.

3,939,802

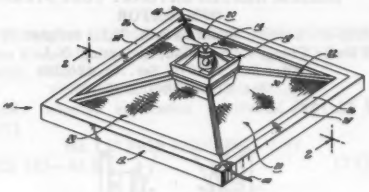
INSECT FEEDING

Gregor N. Neff, 85 Myrtle Ave., Dobbs Ferry, N.Y. 10522

Continuation-in-part of Ser. No. 213,966, Dec. 30, 1971, abandoned. This application Apr. 12, 1974, Ser. No. 460,619

Int. Cl.² A01K 5/00

U.S. Cl. 119—51 R **22 Claims**



1. A device for feeding aquatic animals in a body of water, said device comprising, in combination, insect retention means including a canopy structure, support means for supporting said canopy structure above the surface of said water, said canopy structure defining an enclosed peripheral area of substantial size with said canopy structure covering said area for preventing insects from escaping from the vicinity of the surface of said body of water below the canopy, insect attraction means supported by said support means with said canopy means so as to attract insects towards said area covered by said canopy structure, and insect directional means supported by said support means with said attraction means for directing insects towards said covered area.

3,939,803

HIGH TEMPERATURE BOILER AND METHOD

Herman P. Meissner, Winchester, Mass., and Frank C. Schora, Palatine, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 414,202, Oct. 9, 1973. This application Aug. 12, 1974, Ser. No. 496,763

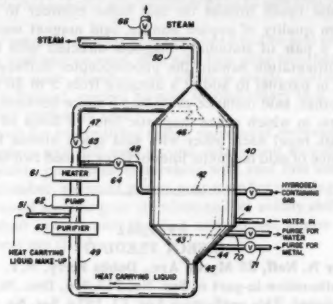
Int. Cl.² F22B 1/06

U.S. Cl. 122—31 R **12 Claims**

1. A process for vaporizing liquid water comprising the steps:

providing a heat-carrying liquid having a low vapor pressure over the temperature range used selected from the group consisting of lead, tin and bismuth and alloys consisting principally thereof at a predetermined elevated temperature to a boiler;

providing liquid water to said boiler; transferring heat from the heat-carrying liquid directly to the liquid water to be



vaporized within the boilers; and

separately withdrawing the produced steam from the boiler.

3,939,804

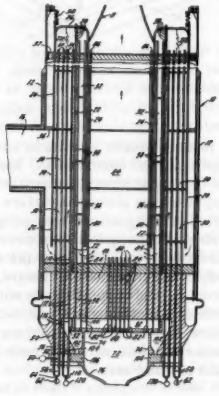
HELIUM HEATED BAYONET TUBE STEAM GENERATOR

Robert O. Barratt, Cedar Knolls, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed July 8, 1974, Ser. No. 486,286

Int. Cl.[2] F22B *1/06, 21/00*

U.S. Cl. 122—32 **11 Claims**



1. A helium heated steam generator comprising:

an outer shell;

a helium intake in said outer shell;

a helium exhaust in said outer shell;

a main tube sheet in said outer shell;

a plurality of economizer bayonet tube assemblies extending upward from said main tube sheet;

a plurality of evaporator bayonet tube assemblies extending upward from said main tube sheet;

a plurality of superheater bayonet tube assemblies extending upward from said main tube sheet;

each of said bayonet tube assemblies having an inner tube and a coaxial outer tube of larger diameter, said outer tubes having closed upper ends and being connected with said main tube sheet, said inner tubes extending below said main tube sheet;

a feed water inlet for supplying fluid to said economizer bayonet tube assemblies;

first conduit means permitting communication between said economizer bayonet tube assemblies and said evaporator bayonet tube assemblies;

second conduit means permitting steam leaving said evaporator bayonet tube assemblies to flow into the annular space between the inner and outer tubes of said superheater bayonet tube assemblies; and

a steam outlet through said shell connected with the inner tubes of said superheater bayonet tube assemblies;

whereby when hot helium gas is flowed through said helium intake over said outer tubes and out of said helium exhaust, and feedwater is flowed through said feedwater inlet, and said economizer bayonet tube assemblies to said evaporator bayonet tube assemblies and steam flows from said evaporator bayonet tube assemblies through said superheater bayonet tube assemblies and through said steam outlet, steam will be superheated in said superheater bayonet tube assembly while flowing upward in the space between said outer and inner tube of said superheater bayonet tube assemblies and leave said superheater bayonet tube assemblies by said inner tubes of said superheater bayonet tube assemblies.

3,939,805

STEAM GENERATOR

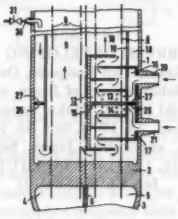
Eberhard Michel, Nurnberg, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Germany

Filed Nov. 26, 1974, Ser. No. 527,349

Claims priority, application Germany, Nov. 26, 1973, 2358830

Int. Cl.[2] F22B *1/06*

U.S. Cl. 122—32 **4 Claims**



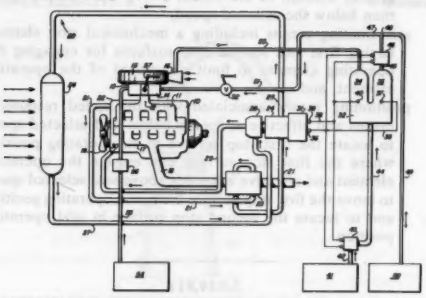
1. A steam generator comprising an upstanding substantially cylindrical casing having a lower portion and a tube plate closing said portion, a U-tube bundle in said casing and having hot and cold legs mounted in said plate, means for flowing primary fluid up through said hot leg and down through said cold leg, a substantially cylindrical shroud encircling said bundle and forming a descent space therearound inside of said casing and opening to the inside of the shroud adjacently above said tube plate, a feed-water preheater enclosing a lower portion of said cold leg and having upper and lower outlets separated by a partition normally closing the preheater against through-flow by way of said outlets, said casing having upper and lower feed-water inlets, upper and lower manifold sections respectively connecting said upper and lower inlets with said preheater respectively above and below said partition, means for closing said inlets, and means for controllably bypassing said partition to establish a flow path from said lower outlet through said preheater and out through said upper outlet.

3,939,806

FUEL REGENERATED NON-POLLUTING INTERNAL COMBUSTION ENGINE

Curtis E. Bradley, 4517 Calle Ventura, Phoenix, Ariz. 85018

Filed Apr. 1, 1974, Ser. No. 456,974
Int. Cl.² F02B 43/08
U.S. Cl. 123—3 5 Claims



1. In an internal combustion engine,
a. an engine block;
b. an exhaust pipe extending from said block;
c. a closed system for a working fluid including a pump for circulating the working fluid through the system, a turbine which is operated by the working fluid when in a gaseous state and a condenser for returning the working fluid from a gaseous state to a liquid;
d. a heat exchanger disposed about said exhaust pipe and through which said closed system passes to derive heat from the exhaust pipe and heat the working fluid;
e. a generator driven by said turbine to produce a DC electric current;
f. an electrolysis cell containing water and connected to said generator so that the DC current therefrom decomposes the water into oxygen and hydrogen;
g. a water tank for supplying water to said electo lysis cell;
h. a hydrogen carburetor on said engine block for delivering hydrogen to a combustion chamber in said block;
i. a conduit extending from said electrolysis cell to said hydrogen carburetor which conveys hydrogen from the cell to the carburetor;
j. a fuel tank for a hydrocarbon fuel;
k. a hydrocarbon fuel carburetor on said engine block and connected to said hydrocarbon fuel tank, and
l. linkage connected to said carburetors and operable to vary the ratio of hydrogen and hydrocarbon fuel which is introduced into the combustion chamber of said engine block.

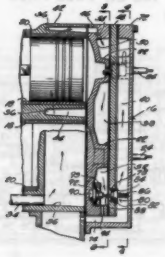
3,939,807

ENGINE TEMPERATURE CONTROL SYSTEM

Charles H. Eichinger, Oshkosh, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 384,063, July 30, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 526,899
Int. Cl.² F01P 7/14
U.S. Cl. 123—41.08 14 Claims

10. An internal combustion engine comprising an engine block member including wall means at least partially defining an engine cylinder, and a cooling system including a coolant jacket, means for supplying coolant to said coolant jacket, a discharge conduit connected to said coolant jacket for discharging coolant from said coolant jacket, a normally closed valve connecting said coolant jacket and said discharge conduit, and means including a temperature responsive element in direct contact with said block member and operably connected to said valve for opening said valve to afford flow of the coolant from said coolant jacket portion to said discharge conduit when the temperature of said engine block member is above a predetermined level, and means for preventing said



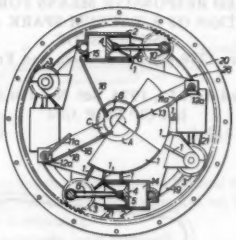
valve from opening when the temperature of said engine block member is below said predetermined level.

3,939,808

CIRCULAR MOTION RECIPROCATING ENGINE

Bohdan Kostecki, and Eugene Kostecki, both of 21 Bath Road, Morley, Australia

Filed July 2, 1974, Ser. No. 485,071
Claims priority, application Australia, July 4, 1973, 3930/73
Int. Cl.² F02B 57/00; F01L 1/34
U.S. Cl. 123—43 R 17 Claims

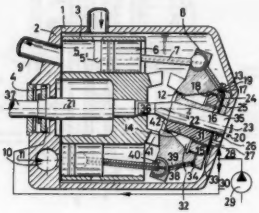


1. A revolving cylinder internal combustion engine comprising an outer body, a rotor mounted for rotation within the body, a plurality of piston and cylinder assemblies carried by the rotor and having axes extending at right angles to the axis of rotation of the rotor, each of the cylinders having an inlet and an exhaust port provided respectively with inlet and exhaust valves supported for rotation with the rotor, means for rotating the rotor in the body responsive to reciprocating movement of the pistons in the cylinders, and cams carried by the body for co-operation with the inlet and exhaust valves for controlling opening and closing of the valves responsive to the rotational movement of the rotor in the body, at least one of the cams comprising an adjustable portion displaceable relative to the remainder of the cam to change the cam profile to vary the dwell time proportion of rotational movement of the rotor during which each valve controlled by the cam is open.

3,939,809
AXIAL-PISTON COMBUSTION ENGINE

Ulrich Rohs, Roonstrasse 11, D 516 Dueren, Germany

Filed Oct. 11, 1974, Ser. No. 513,990
Claims priority, application Germany, Oct. 12, 1974, 2351252
Int. Cl.² F02B 75/26
U.S. Cl. 123—58 B 11 Claims

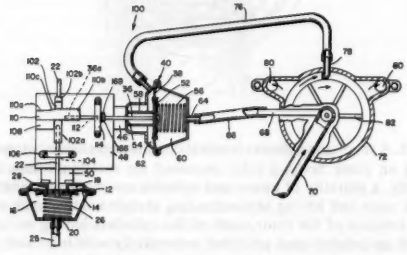


1. An axial-piston combustion engine comprising, in combination, a rotating drum (3) journaled in a stationary housing (1) and provided with cylinder bores (5), an inclined crank disc (8) coupled with said drum, pistons (6) with their rods (7) being pivotally attached to said drum, said pistons being guided in said cylinder bores, wherein said crank disc is supported against the encountered gas pressures, on the one hand, on a customary axial thrust bearing (34), and on the other hand, on two consecutive, hydraulically interconnected series arranged hydrostatic axial thrust bearings (32, 33) fed by an oil-pressure source (28 to 30), only the rearward one (33) of said two thrust bearings having a control slit (16) for controlling oil pressure, and the other one (32) of said two bearings constituting a hydraulic relief for said customary bearing.

3,939,810
ENGINE SPEED RESPONSIVE MEANS FOR CHANGING THE POSITION OF A VACUUM SPARK ADVANCE LIMITER STOP

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Filed Apr. 12, 1974, Ser. No. 460,541
Int. Cl.² F02P 5/04
U.S. Cl. 123—117 A 7 Claims



1. In a vacuum spark advance mechanism for an internal combustion engine of the kind in which an operating element of an intake suction operated spark advance motor is connected to an electrical interrupter mechanism controlling some of the timing of the ignition advance or retard and is normally movable to a maximum vacuum spark advance position by high engine intake suction from the engine when transmitted past control valves, the improvement comprising,

limiting means for limiting the movement of the operating element to an amount less than said normal maximum vacuum spark advance position while still permitting a substantial vacuum controlled spark advance,

speed responsive means associated with the limiting means for changing the limit on the movement in response to a selected change in engine or vehicle speed to permit a greater amount of movement above the selected speed then below the selected speed,

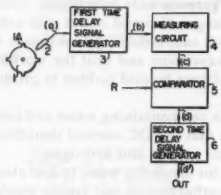
said limiting means including a mechanical stop element having first and second stop surfaces for engaging the operating element to limit movement of the operating element, and

positioning means associated with the speed responsive means and effective at speeds below said selected speed to locate the first stop surface in an operating position where the first stop surface can engage the operating element and effective at speeds above said selected speed to move the first stop surface from said operating position and to locate the second stop surface in said operating position.

3,939,811
IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

Takao Sasayama, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Apr. 10, 1974, Ser. No. 459,800
Int. Cl.² F02P 5/04
U.S. Cl. 123—117 R 20 Claims



1. An ignition apparatus for an internal combustion engine comprising:

means for generating a rotational angle signal associated with the rotational speed of the engine prior to the optimum ignition timing of an engine;

first time delay establishing means adapted to be actuated from the simultaneous time point with the generation of a first rotational angle signal derived from said rotational angle signal generator means;

first measuring means for measuring at a first predetermined coefficient independent of the engine speed the length of time from the time point following the lapse of a predetermined period of time established by said first time delay establishing means until the time point of the generation of a second rotational angle signal derived from said rotational angle signal generator means;

second measuring means adapted to be actuated from the time point of the generation of said second rotational angle signal for measuring at a second predetermined coefficient independent of the engine speed the difference between the measured value of said first measuring means and a predetermined reference value;

means for generating an ignition timing signal when the measured value of said second measuring means reaches a predetermined value;

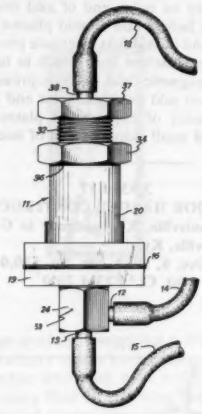
switching means disposed in a primary coil circuit of ignition coils and adapted to be controlled by the ignition timing signal so that electromagnetic induction is caused in said ignition coils by the actuation of said switching means to generate ignition energy of high voltage in a secondary coil circuit of said ignition coils.

3,939,812

VACUUM ADVANCE REGULATING VALVE

Jose Leobardo Gonzalez, Mexico City, Mexico, assignor to Monocar HC Internacional, S.A.

Filed July 29, 1974, Ser. No. 492,809
Claims priority, application Mexico, Aug. 9, 1973, 145477
Int. Cl.² F02P 5/04
U.S. Cl. 123—117 A 6 Claims



1. A valve to prevent atmospheric contamination which automatically regulates the vacuum advance of the distributor in internal combustion engines, in which is included a passage which communicates a vacuum connection of the carburetor with a vacuum advance mechanism of the distributor, characterized in that it includes a conduit having two terminals, one of which is connected to the vacuum connection of said carburetor, and the other one is connected to the vacuum advance mechanism of the distributor, and in that the referred conduit can be obstructed by a valve closing element connected to a diaphragm confined between two principal bodies, one of which comprises said conduit and the other one is composed of a tubular body with inside threading which houses a spring that presses with one of its ends against the diaphragm and with the other end beasing against the lower portion of a threaded nipple, which screws into said inside threaded portion of said tubular body; said threaded nipple comprising a lengthwise bore which extends through a tube which by means of a hose is connected to the intake manifold of the carburetor, permitting the opening of the valve when the engine is working without load.

3,939,813

LIQUID FUEL VAPORIZING DEVICE FOR INTERNAL COMBUSTION ENGINES

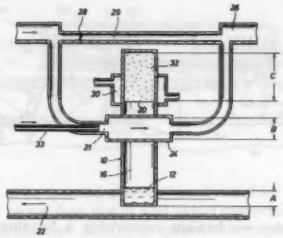
Geoffrey A. Harrow, Wirral; Walter D. Mills, Mold, both of England; John L. Wilson, and Ian C. Finlay, both of Glasgow, Scotland, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 15, 1974, Ser. No. 461,180
Claims priority, application United Kingdom, Apr. 19, 1973, 18888/73
Int. Cl.² F02M 31/00
U.S. Cl. 123—122 A 6 Claims

1. In a device for vaporizing the liquid fuel charge in the inlet system of an internal combustion engine prior to its introduction into a combustion chamber of said engine, said inlet system including combustion air supply means which comprises a main air supply duct to supply the main portion of the combustion air, and liquid fuel supply means disposed to supply liquid fuel to said main air supply duct; said device comprising

at least one heat pipe, said heat pipe being in the form of a substantially sealed vessel;

said heat pipe containing a heat transfer fluid having a boiling point at atmospheric pressure up to 400°C;



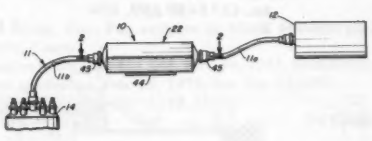
said heat pipe being disposed so that a liquid phase of the heat transfer fluid accepts heat in a heat-recovery zone adapted to contact hot exhaust gases from said engine, and a vapor phase of the fluid being disposed to condense in a heat-discharging zone, the improvement comprising that said heat discharging zone is disposed in heat transfer relationship with said main air supply duct to heat said liquid fuel charge which has been mixed with at least the main portion of the combustion air.

3,939,814

DEVICE FOR PROLONGING IGNITION SPARK

Ralph E. Bergstresser, Hollywood, Calif., assignor to Energy Innovations, Newbury Park, Calif.

Filed Jan. 10, 1975, Ser. No. 539,937
Int. Cl.² F02P 1/00
U.S. Cl. 123—148 A 15 Claims



1. An ignition spark prolong device located in the electrical line connecting the secondary winding of an ignition coil to the distributor comprising:

a core of electrically inert material;

an insulated wire conductor wound around said core and connected at one end to said secondary winding and at the other end to said distributor;

the end of said conductor connected to said secondary winding being wound into a first winding portion along said core in coils of wire spaced apart;

the other end of said first portion being connected to a first section of a second winding portion wound along said core in the same direction as said first portion in coils closely adjacent one another;

a second section of said second winding portion connected to the end of said first section and wound in a reverse direction from said first section along said core in closely adjacent coils; and

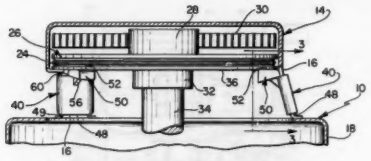
a third section of said second winding portion connected to the end of said second section and wound in a reverse direction from said second section along said core in closely adjacent coils;

the wire conductor at the end of said third section being connected to said distributor.

3,939,815
ENGINE STARTER AND BRACKET

Donald K. Spivey, 3645 N. 50th St., Tampa, Fla. 33619

Filed Nov. 19, 1974, Ser. No. 525,206
Int. Cl.² F02N 3/02; B23P 7/00
U.S. Cl. 123—185 BA 11 Claims

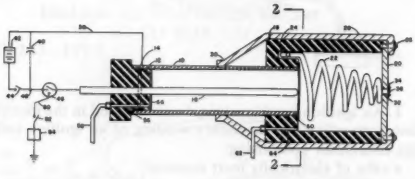


1. A starter mechanism comprising a housing having a support with opposite edge portions, a starter reel received within said housing, a bracket including a body having a face and an end portion, said body including means for mounting the bracket on the support, the mounting means extending outwardly from said face and including opposed channels, one for each of the support edge portions, for receiving the associated one of the support edge portions, the channels being transverse to the body end portion, said body further including means for supporting said reel, the supporting means being proximate said end portion and extending in a direction opposite that of the mounting means.

3,939,816
GAS FILLED COAXIAL ACCELERATOR WITH COMPRESSION COIL

Patrick N. Espy, Huntsville, Ala., assignor to The United States of America as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed July 12, 1974, Ser. No. 488,614
Int. Cl.² F41F 1/02, 1/04
U.S. Cl. 124—11 R 5 Claims



1. An apparatus for accelerating and compressing plasma comprising:

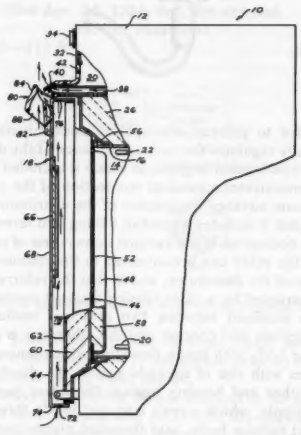
a. an elongated cylindrical first electrode;
b. a central rod electrode disposed coaxially of said first electrode out of contact therefrom;
c. an electrically conductive element extending between said central rod electrode and an inner end of said first electrode;
d. a plug sealing said inner end of said first electrode;
e. a rupturable seal carried over an outer end of said first electrode;
f. means for inserting gas within said elongated cylindrical first electrode;
g. an elongated electrically conductive helical coil having a large diameter end and a small diameter end;
h. said large diameter end of said helical coil being carried adjacent said outer end of said first electrode and said small diameter end being spaced longitudinally therefrom;
i. means for electrically connecting the small diameter end of said helical coil to said first electrode;
j. means for applying a high voltage to said first electrode and said central rod electrode for causing said electrically conductive element to ionize producing a plasma which is accelerated forcing said gas out of said outer end of said first electrode; and
k. said helical coil being in axial alignment with said elongated cylindrical first electrode so that a current path is formed between an outer end of said central rod electrode and said helical coil as said plasma is accelerated out the outer end of said first electrode producing current flow through said helical coil, which in turn produces a time varying magnetic field that compresses said plasma and gas adjacent said small diameter end of said coil;

whereby a source of compressed plasma is produced adjacent said small diameter end of said helical coil.

3,939,817
OVEN DOOR HANDLE CONSTRUCTION

James J. Nuss, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 6, 1974, Ser. No. 530,072
Int. Cl.² F23M 7/00
U.S. Cl. 126—190 3 Claims



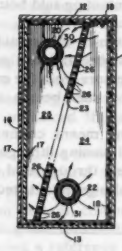
1. A door construction for a high temperature oven comprising an outer door panel and a spaced inner door liner that is adapted to be exposed to the high temperatures within the oven, thermal insulating means within the door for retarding the flow of heat from the inner door liner to the outer door panel, and cooling air channel means behind the outer door panel to allow room ambient air to enter the bottom of the door and rise up through the door and exit adjacent the top edge of the door; the invention comprising an elongated door handle having attaching means fastened to the door adjacent the top edge thereof and elevated gripping means spaced away from the door and extending above the top edge of the door, said gripping means also serving as an upward deflector means for the hot air expelling from the door and as a shielding means to prevent ready access to the oven area immediately above the door, wherein the said door handle substantially extends from one side of the door to the other and the door gripping means is spaced away from the said attaching means by a plurality of spaced strut members thereby forming air passages up through the handle so that room air may pass up through the handle and mix with the hot air coming from the oven.

3,939,818

SOLAR ENERGY HEATING MODULE AND ASSEMBLY

George Henry Hamilton; Robert McLean Turner, both of Washington, D.C., and Jesse Lee Ward, Jr., Arlington, Va., assignors to Solar Energy Company, Washington, D.C.

Filed Apr. 23, 1974, Ser. No. 463,358
Int. Cl.² F24J 3/02
U.S. Cl. 126—270 6 Claims



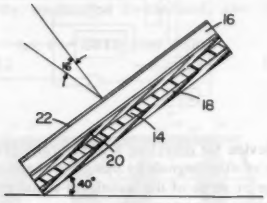
1. A solar energy module comprising a sealable chamber having cross-flow radiator means having honeycomb cells and dividing said chamber into fluid inlet and outlet compartments, means to supply fluid to said inlet chamber including at least one perforated sleeve extending through said inlet compartment and supported by said chamber, and a perforated manifold extending through said inlet compartment and generally concentrically disposed within said perforated sleeve, wherein said manifold and said sleeve are positionable relative to each other for enabling adjustment in direction and volume of fluid flow through said sleeve.

3,939,819

SOLAR RADIANT ENERGY COLLECTOR

John E. Minardi, Kettering, Ohio, assignor to The University of Dayton, Dayton, Ohio

Filed Mar. 29, 1974, Ser. No. 456,177
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 4 Claims



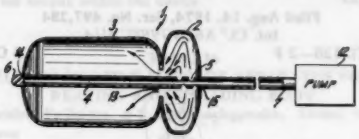
1. A solar radiant energy collector comprising a source of liquid having a medium dispersed therein with a high absorptance to solar energy, a transparent tube of an extended length wound in a configuration to provide a flat-like planar surface for maximum exposure to solar radiant energy, a reflector surface positioned on the opposite side of said planar surface to that exposed to said solar radiant energy a liquid inlet and outlet joined with said transparent tube; and liquid pressure means to cause said liquid to flow from said inlet through said tube and to said outlet.

3,939,820

SINGLE-CHAMBER, MULTI-SECTION BALLOON FOR CARDIAC ASSISTANCE

Joseph Grayzel, Englewood, N.J., assignor to Datascope Corporation, Paramus, N.J.

Filed Oct. 29, 1974, Ser. No. 518,979
Int. Cl.² A61B 19/00
U.S. Cl. 128—1 D 4 Claims



1. A device to be inserted within a blood vessel for assisting unidirectional blood flow within said vessel comprising:

a. an inflatable and deflatable chamber mounted upon support means within said chamber, said chamber being divided into an occluding section and a pumping section, said sections being secured to said support means only at their non-adjacent ends, their adjacent ends being only partially separated from each other, not secured to said support means, and thus in direct communication with each other;

b. gas delivery means terminating only in said occluding section; and

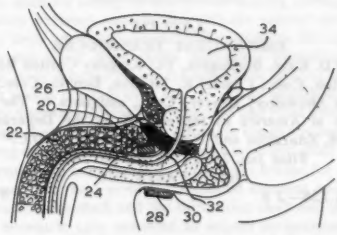
c. gas providing means connected to said gas delivery means such that gas passes from said providing means to said delivery means and from said delivery means into said occluding section and then from said occluding section directly to said pumping section so as to inflate said occluding section and said pumping section in that order causing said pumping section to pump blood in a direction away from said occluding section.

3,939,821

MAGNETICALLY ACTUATED TUBE COMPRESSING VALVE

Russell B. Roth, Erie, Pa., assignor to Altair, Incorporated, Plymouth, Conn.

Continuation of Ser. No. 415,645, Nov. 14, 1973, abandoned.
This application Feb. 25, 1975, Ser. No. 552,935
Int. Cl.² A61B 19/00
U.S. Cl. 128—1 R 14 Claims



1. A valve means for controlling the flow of liquid through an intercorporeal duct having tissue adjacent thereto comprising a first permanent magnet, a biologically inert sheath means contiguously surrounding the first magnet and immovably fixed with respect to the first magnet for securely attaching the first magnet to said tissue adjacent to said duct, a second magnet, and means for selectively positioning the second magnet extracutaneously adjacent the duct for magnetically interacting with the first magnet thereby causing the first

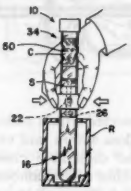
magnet and the sheath means to clamp the duct in a position to stop the flow of liquid therethrough.

3,939,822

DISPOSABLE BLOOD COLLECTION AND FILTERING DEVICE

Jack Markowitz, 3705 Fieldstone Road, Randallstown, Md. 21133

Filed Aug. 14, 1974, Ser. No. 497,284
Int. Cl.² A61B *19/00, 5/14*
U.S. Cl. 128—2 F **3 Claims**



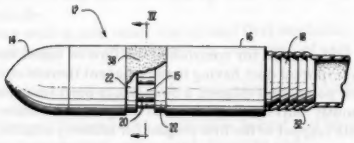
1. In a blood handling system having first and second evacuated chambers, means for affixing the chambers together detachably, means for admitting fluid into the first chamber including a resilient closure at one end thereof, means for valving fluid from the first chamber to the second chamber, and means for separating components of the fluid, the improvement comprising: the means for affixing comprising a resilient tubular conduit having a first end resiliently fitted into the first evacuated chamber, a second end resiliently fitted into the second evacuated chamber, a middle portion larger in diameter than said first and second ends spacing-apart the ends of said first and second evacuated chambers a distance permitting said middle portion to be manually squeezed inward between the ends of the first and second evacuated chambers; means for valving, comprising a spherical member of frangible material resiliently fitted in sealing contact within the bore of the resilient tubular conduit in said middle portion between the ends of said first and second evacuated chambers in position to be crushed by a said manual squeeze; and a filter resiliently fitted in the bore within said second end of the resilient tubular conduit inserted in said second evacuated chamber, with the end of said second evacuated chamber positioned for retaining the filter against disturbance by a said manual squeezing to crush the frangible member.

3,939,823

ESOPHAGEAL TRANSDUCER

Michael D. Kaye, Burlington, Vt.; Kingsley Carlton Rock, Jr., Littleton, Colo.; Charles E. Johnson, Denver, Colo., and J. Philip Showalter, Denver, Colo., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jan. 28, 1975, Ser. No. 544,932
Int. Cl.² A61B *5/10*
U.S. Cl. 128—2 S **9 Claims**



1. A pressure sensing device for measuring pressure circumferentially in internal body cavities comprising:

a catheter for introducing said pressure sensing device into the internal body cavities,

a rigid cylindrical transducer housing connected to said catheter and defining an open cavity therein spaced along the length thereof, said housing having a distal end,

pressure sensing means, mounted entirely within said housing and in pressure communication with said cavity, for generating an electrical signal in response to pressure in said cavity,

means for sensing the pressure impinging on said transducer housing circumferentially comprising an annular flexible sleeve member contacting said housing coaxial therewith and surrounding said cavity,

a liquid medium contained within said cavity and in contact with said flexible sleeve and said pressure sensing means for transferring pressure from the entire circumference of said flexible sleeve member to said pressure sensing means,

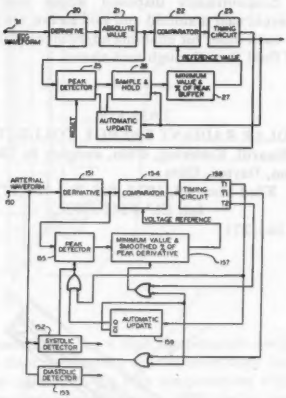
electrical transmitting means connected to said pressure sensing means and passing through the distal end of said housing and passing through said catheter for transmitting said electrical signal to a receiver external to the body.

3,939,824

PHYSIOLOGICAL WAVEFORM DETECTOR

Harold N. Arneson, Oak Creek, and Louis J. Heitlinger, Waukesha, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 404,408, Oct. 9, 1973, Pat. No. 3,878,833.
This application Jan. 9, 1975, Ser. No. 539,698
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.05 A **7 Claims**



1. A device for detecting a waveform signal portion in the presence of other signals by using the characteristic time rate of change or slope of the waveform signal portion as criteria for its existence, comprising:

a. means for differentiating said waveform signal to produce a differentiated signal having a portion whose magnitude is representative of said slope criteria,

b. means for detecting the peak magnitude of said differentiated signal,

c. means for producing a reference signal including means for converting said peak magnitude signal to a signal representing a predetermined percentage thereof, said last named signal constituting said reference signal and corresponding in magnitude with the derivative of the slope of said waveform signal portion,

d. comparator means having inputs for receiving said differentiated signal and reference signal, respectively, said

comparator means producing an output signal change when said differentiated signal magnitude is greater than said reference signal,

e. timing means responsive to occurrence of said last named output signal change by initiating measurement of a first time interval which, if completed, is indicative of said waveform portion meeting the time criteria, said timing means also being responsive to terminate measurement of said first interval if said output signal discontinues before expiration of said predetermined period,

f. means responsive to completion of said first time interval by actuating said timing means to continue to measure a second time interval, and

g. resetting means responsive to completion of said second interval by resetting said reference signal producing means to produce a reference signal having a different value than the preceding reference signal existing when said comparator produced the aforementioned output signal.

3. A device for detecting the minimum and maximum magnitudes of a particular waveform signal in the presence of other signals by using plural characteristics of said waveform signal for identification thereof, comprising:

a. means for receiving and differentiating said signals,

b. means for producing a reference signal,

c. means for comparing the magnitude of said differentiated signals with the magnitude of said reference signal, said comparing means changing its output signal in response to said differentiated signal magnitude being greater than said reference signal magnitude, said signal change being indicative of one characteristic of said waveform if said change is sustained for a predetermined time interval and being indicative of a waveform which it is not desired to detect if it is sustained for less than said predetermined time interval.

d. timing means for measuring the duration of said change,

means for detecting said undifferentiated waveform signal, and

f. means for sampling the minimum and maximum magnitudes of said last named detected signal in response to said timing means measuring a change duration at least as long as said predetermined interval, and

means for storing said minimum and maximum signals.

3,939,825
APPARATUS FOR PEDICURE

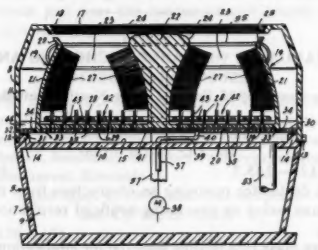
Leo Krummenacher, Luzernerstrasse 36, 6030 Ebikon, Switzerland

Filed Jan. 29, 1975, Ser. No. 545,106

Claims priority, application Switzerland, Jan. 29, 1974, 1163

Int. Cl.² A61H 7/00, 9/00

U.S. Cl. 128—52 **15 Claims**



1. Apparatus for pedicure, comprising:

means defining an open top treatment chamber receptive of at least one human foot;

at least one foot-receiving scrubbing device within said chamber provided with an upwardly opening generally channelshaped cavity having foot scrubbing means therein affixed to the device;

foot rest means within said cavity; and

means for effecting relative reciprocation of the device and the foot rest means for foot scrubbing action between the scrubbing means with respect to a foot located on the foot rest means within the cavity.

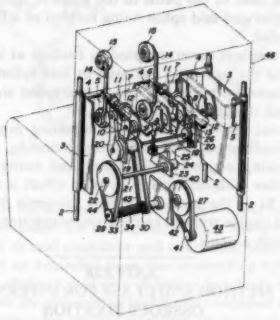
3,939,826
ELECTROMOTIVE MASSAGE APPARATUS FOR BEATING AND KNEADING BODY

Shinichiro Fujimoto, 6-8 Hannanchounaka, Abeno, Osaka, Japan

Filed Nov. 7, 1974, Ser. No. 521,795

Int. Cl.² A61H 23/00

U.S. Cl. 128—55 **3 Claims**



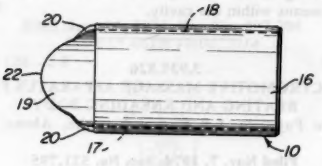
1. An electromotive massage device comprising in combination: an electrically-driven power means for driving a shaft rotatably; first drive shaft means including a first drive shaft adapted to be driven by the electrically-driven power means, and a second drive shaft spaced axially from the first drive shaft, and a third drive shaft mounted as a tubular shaft coaxially around and separately rotatably from the first drive means; and a tubular gear means providing a tubular gear slidably shiftable axially to and fro for shifting driving torque alternately between engagement with the second drive shaft and the third drive shaft providing for alternate driving of the second and third drive shafts selectively intermittently as desired; lever selector means for selectively moving the tubular gear means in either of to and fro axially engageable directions for alternate driving of the second and third drive shafts; a massage means providing for alternate use as a massager and a tapping device, including a pivotably mounted shaft element and a mounting base therefor; a first lever means for drivably interconnecting said pivotably mounted element and one of the second drive shaft and the third drive shaft and including a first eccentric cam mounted to impart reciprocatable upright motion to said pivotably mounted element; and a second lever means drivably interconnected to the remaining one of the second drive shaft and the third drive shaft and including a second eccentric cam mounted to impart reciprocatable upright motion to the massage means, and a tapping element axially reciprocatably mounted and adapted for horizontal movement on the mounting base and drivably connected to said second lever; such that the pivotably mounted element is movable pivotably uprightly intermittently selectively and alternately said tapping element is reciprocatable axially horizontally intermittently selectively.

3,939,827

ERECTION AID FOR A PENIS

Frank H. Brunstetter, San Antonio, Tex., assignor to Hi-Torr Inventions Corporation, San Antonio, Tex.

Filed Oct. 29, 1974, Ser. No. 518,295
Int. Cl.² A61F 5/00
U.S. Cl. 128—79 12 Claims



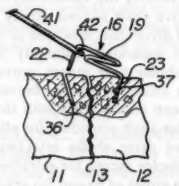
1. An erection aid for a penis including:
a support splint adapted to extend along the ventral surface of the penis, said splint adapted to extend from adjacent to the base of the penis to the glans of the penis prior to erection and said splint being formed of a firm, bendable material;
a thin, resilient cover adapted to enclose at least that portion of the penis not enclosed by said splint and adapted to extend from the rear end of said splint and terminating behind the glans of the penis;
said cover including releasable retaining means to secure longitudinal edges of said cover to mating, longitudinally extending edges of said splint and being dimensioned together with said splint so as to effect a snug but non-tight fit on the penis to support the penis for penetration into a vagina without causing any restriction of blood flow through a penis.

3,939,828

METHOD AND CLASP FOR INTERNAL OSSEOUS FIXATION

Robert N. Mohr, 1350-9th Ave., and Howard J. Zlotoff, 1341-12th Ave., both of San Francisco, Calif. 94122

Filed Sept. 9, 1974, Ser. No. 504,052
Int. Cl.² A61F 5/04
U.S. Cl. 128—92 B 5 Claims



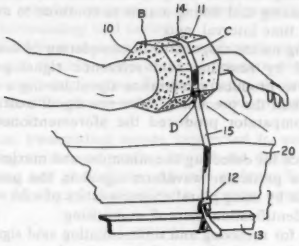
1. A clasp for osseous fixation formed of a unitary piece of resilient wire and having a horizontal portion formed of first, second and third stretches, a first 180° bend interconnecting a first end of said first stretch with a first end of said second stretch, a second 180° bend interconnecting a second end of said second stretch with a first end of said third stretch, said first, second and third stretches in the unstressed condition of said clasp being substantially parallel to each other and being of substantially identical lengths, a first leg depending from a second end of said first stretch, a second leg depending from a second end of said third stretch, said legs being located on diagonal corners of said clasp, said legs converge and each said leg is disposed at an acute angle relative to said horizontal portion said horizontal portion being stressed when said legs are pulled away from each other by increasing the arcuate extents of said bends, said legs being remote from each other so that said legs may be inserted in holes drilled in bone segment on opposite sides of an osteotomy or fracture.

3,939,829

RESTRAINING CUFF

Donald C. Spann, 5 Ferncreek Court, Greenville, S.C. 29607

Filed July 9, 1974, Ser. No. 486,763
Int. Cl.² A61F 5/37
U.S. Cl. 128—133 2 Claims



1. A restraining cuff and the like comprising:
restraining means for placement upon the extremities of a patient confined to prolonged bed rest for elevating the extremities, and for restraining undesireable movement of a patient reclining upon a bed;
said restraining means including,
an elongated block of resilient deformable polyurethane foam material;
said elongated block including a bore therethrough defining a continuous internal wall extending longitudinally of said elongated block for receiving an extremity:
said restraining means further defining a thickened, closed integral circumferential cylindrical layer of resilient deformable material, wherein the distance in cross section from said internal wall to the perimeter of said layer maintains an extremity placed within said wall in elevated position above a mattress of the bed so as to avoid pressure point contact between the extremity and the mattress as would result in the formation of decubitus ulcers;
a strap encircling a medial outer portion of said block and extending free of said block providing a tie portion for fastening to the bed; and
adjustable fastening means for securing said strap encircling the block constricting said circumferential layer of foam resiliently engaging an extremity of a patient;
whereby chaffing of the extremity engaged by the cuff may be avoided and the extent of contact between the extremity and the mattress reduced.

3,939,830

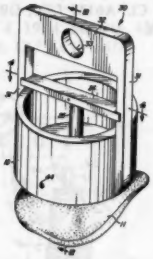
MANUALLY OPERABLE DECHOKING AND RESUSCITATING DEVICE

Harry da Costa, 5925 Foothill Drive North, Scottsdale, Ariz. 85253

Filed Mar. 10, 1975, Ser. No. 557,111
Int. Cl.² A61M 16/00
U.S. Cl. 128—145.7 10 Claims

1. In a device for removing an obstruction from the throat of a human being or generating artificial respiration in said being,
a. a face mask of a flexible material for application over the mouth and nose of said human being including a main body portion and side wall structures having marginal peripheral portions that are pressed against the nose-chin area in airtight relation therewith to define a cavity over said mouth and nose,

b. an opening in said main body portion,
c. a rigid cylinder having one end open and its other end closed by an end wall formed with a central opening in alignment with the opening in the main body portion of the mask,
d. means for securing said end wall to said main body portion,
e. a one way check valve in said end wall offset from said central opening which when open permits passage of air from the interior of said cylinder to the exterior thereof and which when closed inhibits passage of air through the end wall to the interior of said cylinder,
f. a moveable detent means on said end wall for holding said check valve in closed position,
g. a piston reciprocal in said cylinder,
h. said piston having an orifice together with a safety valve controlling the passage of air through said orifice which opens when a safe limit of suction is reached on an outstroke of said piston,



i. a rod upstanding from said piston centrally thereof and projecting beyond the open end of the cylinder when the piston is in its innermost position,
j. a finger engageable handle on the outer end of said rod,
k. spring means biasing said piston towards said end wall whereby instrokes of the piston are powered by said spring means,
l. a frame including a cross-members extending transversely of said open end and mounted on the exterior of said cylinder whereby said member is gripped by the hand of an operator whose fingers are in engagement with said finger engageable member and tightening of the grip of said hand causes an outstroke of said piston against the influence of said spring means,
m. a bleed hole in said cylinder adjacent to said end wall; and
n. a tube secured to said main body portion and communicating with the opening therein, said tube having an extent just long enough to provide for its insertion between the teeth and over the tongue of said human being to function as a gag and tongue depressor.

3,939,831

PROCESS FOR PREPARING MEDICINAL DRESSINGS

Gheorghe Cioca; Nicolae Tigaeru; Agrippa Ionescu; Nicolae Chiotan; Mihai Constantinescu, and Gheorghe Niculescu, all of Bucharest, Romania, assignors to Intreprinderea Flacara Rosie, Bucharest, Romania

Filed Mar. 4, 1974, Ser. No. 447,559
Int. Cl.² A61L *15/00*
U.S. Cl. 128—156 **4 Claims**

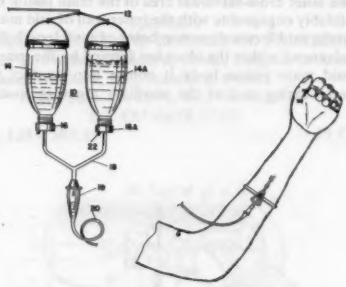
1. A method of making a collagen-based medicinal dressing comprising the steps of:
freezing a collagen polydispersion containing a bacteriocide, bacteriostat or healing-promotion agent in water to a temperature between −65°C and −70°C for a period of 2.5 to 3.2 hours,
drying the frozen polydispersion by vacuum sublimation over a period of substantially 24 to 48 hours at a pressure of 10^{-2} to 10^{-3} torr, and
maintaining the temperature during the vacuum sublimation period up to +35°C.

3,939,832

LIQUID FLOW REGULATOR AND MONITOR FOR INFUSION SYSTEM

John J. Miller, Marietta, Ohio, assignor to Med-Pak Corporation, Charleston, W. Va.

Filed Mar. 9, 1973, Ser. No. 339,839
Int. Cl.² A61M *5/00*
U.S. Cl. 128—214 R **7 Claims**



1. Apparatus for administering medicated liquid to a patient including a container for the liquid, a drip chamber immediately adjacent to said container and connected thereto with a hose line, and an extended hose line connecting said fluid in the container through said drip chamber to a body insertable cannula, means for suspending said liquid container above the body of the patient for gravitational flow of said liquid through said drip chamber and said extended hose line; the improvement comprising:
liquid flow control means having an input fluid passage directly connected to the terminal end of said extended hose line opposite to that of said drip chamber, and an output fluid passage;
said control means including metering means for metering and indicating the liquid passing therethrough;
means for securing said control and metering means to the body of a patient adjacent to the point of entry of said body insertable cannula;
said output fluid passage in said control means directly connected to said body insertable cannula and;
valve means connected with said control means to vary the size of said fluid passage;
whereby said control and metering means controls and meters the fluid passage at the point of entry of said body insertable cannula.

3,939,833

PISTON CONSTRUCTION FOR SYRINGES

Bengt Eve Hansson, Holden, Mass., and Edward A. Tischlinger, Niantic, Conn., assignors to Astra Pharmaceutical Products Inc., Worcester, Mass.

Filed Jan. 15, 1975, Ser. No. 541,202
Int. Cl.² A61M *5/00*
U.S. Cl. 128—218 P **3 Claims**

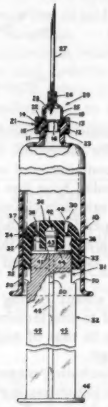
1. In a prefilled, disposable hypodermic syringe, or cartridge intended therefor, of the type sealed at its foward end with a destructible diaphragm, a piston and piston rod construction comprising:
a. a unitary piston of molded resilient material and composed of a main piston body constituted of a hollow cylinder having an annular inner wall and an exterior

formed to sealably engage the inner surface of a syringe barrel;

b. an auxiliary member or reduced diameter and substantially shorter than said hollow cylinder coaxially enclosed within the forward end of said main cylindrical piston body with the external surface of said auxiliary member spaced from said inner piston body wall, and

c. a transverse, annularly-shaped elastic membrane connecting said auxiliary member in yieldable sealed engagement with the inner wall of said main cylindrical piston body;

d. a piston rod having a forward portion and a following portion fixedly connected together, and movable as a unit relative to the main piston body, said forward portion having a lateral cross-section dimension approximating the inner cross-sectional area of the main piston body and slidably engageable with the inner wall of said main piston body, said forward portion being of such length that when advanced within the chamber formed by the inner wall of said main piston body it comes into contact with the inner-facing end of the auxiliary member spaced from



such inner wall and moves said member forwardly for a predetermined distance limited by the length of said forward position without causing movement of said main piston body, the outer-facing end of the auxiliary member having an area substantially less than the cross-sectional area of the syringe barrel and such that as said member moves through such predetermined distance while said main piston body remains stationary, it exerts a forwardly directed force through the liquid contacts in the syringe barrel sufficient to rupture the distructible diaphragm; and

e. a forwardly directed shoulder formed by said forward piston rod portion and the following portion of said piston rod, and having a lateral cross-section dimension greater than the inside diameter of said main piston body so that when the auxiliary member has been distended to the desired distance, continued application of pressure to the piston rod will cause such shoulder to engage the main piston body and to coact with said forward piston rod portion in engagement with the auxiliary member to move the piston as a whole with said auxiliary member distended within the syringe barrel.

3,939,834
METAL COATED ARTICLES

Patrick J. McMahon, 87 Interlaken Ave., New Rochelle, N.Y. 10801

Filed Sept. 24, 1974, Ser. No. 508,827
Int. Cl.[2] A61J *1/00*
U.S. Cl. 128—272 17 Claims

1. A container for biological media comprising a transparent or translucent receptacle having the interior surface coated with a coherent light transmitting barrier layer of metal selected from stainless steel, chromium, gold, nickel, platinum, palladium, vanadium, cadmium, tin, tantalum and tungsten.

3,939,835
MEDICAL ASPIRATION SYSTEM VACUUM LEVEL INDICATOR

Henry Bridgman, P.O. Box 71, Convent Station, N.J. 07961

Division of Ser. No. 258,960, June 2, 1972, Pat. No. 3,833,000.
This application July 3, 1974, Ser. No. 485,335
Int. Cl.[2] A61M *1/00*; G01L *21/00*
U.S. Cl. 128—276 2 Claims

1. A vacuum level indicator for use in an evacuated empty medical uterine aspiration collection bottle comprising an expandable non-porous elastic membrane positioned inside said collection bottle and adapted to be used with means for regulating the introduction of material from the uterus into said evacuated bottle, said bottle being transparent to permit viewing of said indicator, said membrane defining an enclosed volume inside said evacuated bottle, a predetermined quantity of gas within said enclosed volume sufficient to provide a first visually observable expansion of said elastic membrane when said bottle is empty and evacuated, and a different expansion when said bottle is either substantially filled with aspirated material or when said bottle is no longer evacuated.

3,939,836
WATER DISPERSIBLE NONWOVEN FABRIC

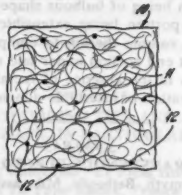
Deger C. Tunc, East Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Feb. 7, 1974, Ser. No. 440,427. The portion of the term of this patent subsequent to Apr. 16, 1991, has been disclaimed.
Int. Cl.[2] A61F *13/16, 13/18, 13/20*; A41B *13/02*
U.S. Cl. 128—284 20 Claims

1. A water-dispersible nonwoven fabric comprising: a layer of overlapping, intersecting fibers, said fibers having a length not more than about 2 inches; and from about 4 to about 35 percent by weight of the fabric of an alkali salt of a sulfated cellulose ester resin binder distributed in said fabric, said resin binder having an average of from about 0.1 to about 0.45 sulfate groups per anhydroglucose unit.

12. An absorbent product for contacting body fluids comprising: an absorbent core and a fluid-pervious, water-dispersible nonwoven fabric covering at least a portion of said absorbent core; said nonwoven fabric comprising a layer of overlapping, intersecting fibers, said fibers having a length not more than about 2 inches; and, distributed in said fabric, from about

4 to about 20 percent by weight of the fabric of an alkali cellulose ester sulfate resin binder, said resin binder having an



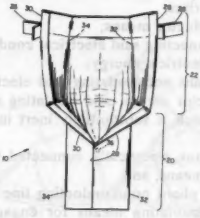
average of from about 0.27 to about 0.40 sulfate groups per anhydroglucose unit.

3,939,837

DISPOSABLE DIAPER WITH FIT IMPROVING MEANS

Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Feb. 4, 1974, Ser. No. 439,100
Int. Cl.² A61F 13/16
U.S. Cl. 128—287 4 Claims



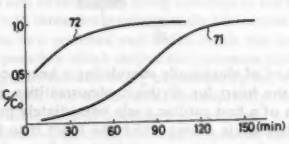
1. In a generally rectangular disposable diaper comprising an outer water impervious backing sheet, an inner water pervious liner and an absorbent body therebetween and having opposite lateral margins and having a front section and a back section on opposite sides of a longitudinal midpoint of the diaper, the improvement wherein said diaper is folded into a configuration with said lateral margins in contact, said lateral margins being releasably adhesively secured to each other only in said diaper front section at a location between from about two inches to about four inches along said margins from said diaper midpoint, whereby said front section may be temporarily retained in said folded configuration while said back section is unfolded for application of the diaper to an infant.

3,939,838

ARTICLE FOR TREATING MENSTRUAL FLUID

Nobuakira Fujinami, Yokosuga, and Tadashi Nagano, Tokyo, both of Japan, assignors to Unicharm Kabushiki Kaisha, Kawanoe, Japan

Filed Aug. 20, 1974, Ser. No. 498,893
Int. Cl.² A61F 13/16
U.S. Cl. 128—290 R 2 Claims



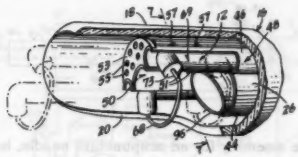
1. An article for treating menstrual fluid comprising: a cover member forming an enclosure, said cover member being made of a porous non-woven sheet of cellulose fiber and artificial fiber; a cottony thin web attached to the inside of said enclosure; an absorbent layer means positioned within said enclosure and said web for absorbing the menstrual fluid; a first water-proofing layer means positioned under said absorbent layer means; a deodorizer means located within said enclosure and having the function of absorbing and holding the menstrual fluid and simultaneously removing the odor released from the menstrual fluid; and a second water-proofing layer means in contact with the cottony web and positioned under and around the sides of said first water-proofing layer, said absorbent layer and said deodorizer means; said first and second water-proofing layers defining means for preventing any menstrual fluid not absorbed by the absorbent layer from permeating to the outside of said cover member.

3,939,839

RESECTOSCOPE AND ELECTRODE THEREFOR

Lawrence E. Curtiss, Stamford, Conn., assignor to American Cystoscope Makers, Inc., Stamford, Conn.

Filed June 26, 1974, Ser. No. 483,117
Int. Cl.² A61B 17/32
U.S. Cl. 128—303.15 19 Claims



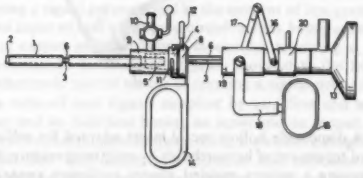
1. A working element assembly for use in a resectoscope having a sheath, said assembly including a stem portion for insertion within the sheath, and having a telescope channel member with a central axis and a pair of parallel cutting electrode guide channel members spaced apart and sealingly mounted on the telescope channel member on opposite sides thereof substantially along its full length above its central axis and in which a portion of the cutting electrode guide channel members and the telescope channel member portion between them and above said axis form a roof member which extends a distance distally beyond the portion of the telescope channel member below said axis.

3,939,840

OPERATION ENDOSCOPE

Karl Storz, Auf dem Schildrain, Germany, assignor to Storz-Endoskop GmbH, Schaffhausen, Switzerland

Filed July 18, 1974, Ser. No. 489,775
Claims priority, application Germany, July 26, 1973, 7327364
Int. Cl.² A61B 17/32
U.S. Cl. 128—303.15 3 Claims



1. An operation endoscope, comprising:

a. an electrotome including an electrode, an elongated operating rod connected to said electrode and a head

member slidably supporting the operating rod for longitudinal movement relative thereto,

b. an elongated hollow sleeve of electrical insulating material mounted at its rearward end on the head member and extending forwardly therefrom freely around the operating rod, and

c. an elongated hollow metal endoscope shaft freely encircling the sleeve and mounted removably at its rearward end on the head member independently of the sleeve, whereby the endoscope shaft and sleeve are separable from each other by relative longitudinal movement in the direction by which the sleeve is retracted rearwardly relative to the shaft,

d. the sleeve extending forwardly at least to the forward end of the shaft.

3,939,841

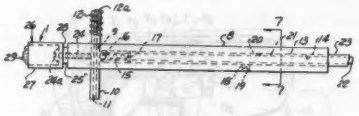
ACUPUNCTURE NEEDLE GUIDE AND RESTRAINT

Albert A. Dohring, and Grace H. Dohring, both of 24028 Union, Dearborn, Mich. 48124

Filed Mar. 6, 1974, Ser. No. 448,618

Int. Cl.² A61H *39/08*

U.S. Cl. 128—303.19 **6 Claims**



1. A guide assembly for an acupuncture needle, including a tubular guide to receive and guide an acupuncture needle, said tubular guide having both ends open, and

a yieldably resilient restraint carried by said tubular guide, and having a section extending substantially transversely across an open end thereof to form an opening between the interior surface of the guide and the section, said section being adapted to yieldably engage a needle against the interior surface of said guide to frictionally resist undesired movement of such needle longitudinally of said tubular guide.

3,939,842

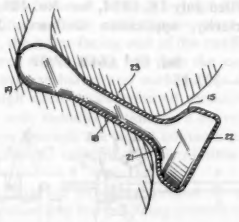
HEMORRHOIDAL DEVICE

Arthur M. Harris, Miami Shores, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Filed Sept. 5, 1974, Ser. No. 503,335

Int. Cl.² A61F *7/12*; A61B *17/36*

U.S. Cl. 128—401 **4 Claims**



1. A disposable hollow rectal insert adapted for self-administered treatment of hemorrhoids by cold temperature therapy comprising a unitary molded plastic enclosure containing a freezable medium including an elongated tubular stem portion having enclosed ends and dimensioned for manual rectal insertion at a first of said ends and having an enlarged stop portion at the second of said ends to prevent rectal insertion of the latter, said stem portion adjacent said first end having a relatively thin wall thickness rendering the same collapsible under rectal pressure when said medium is in the liquid state, said stop portion being of bulbous shape and having a relatively thin wall portion being extensible and providing increased internal volume therein to compensate for the collapse of said first end portion under said rectal pressure, said first end portion in the absence of rectal pressure having a bulbous configuration of insertable dimensions.

3,939,843

TRANSVENOUS ELECTRODE

Nicholas P. D. Smyth, Bethesda, Md., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 4, 1974, Ser. No. 447,552

Int. Cl.² A61N *1/04*

U.S. Cl. 128—404 **23 Claims**

11. A body implantable lead adapted to make electrical contact with the inner wall of an internal body organ or chamber which comprises:

electrical conductor means;

means for connecting said electrical conductor means to a source of electrical energy;

insulating means encapsulating and electrically insulating said conductor means, said insulating means being of a material which is substantially inert in body fluids and tissue;

electrode means electrically connected to said electrical conductor means; and

a plurality of pliant non-conducting tine means extending from said insulating means for engaging body tissue, without penetration of the tissue, to urge said electrode means in a given, nominally transverse direction, none of said tine means extending in a direction less than 90° from said given direction.

3,939,844

METHOD AND APPARATUS FOR STIMULATING A HEART TO ELIMINATE RHYTHMIC ABNORMALITIES, ESPECIALLY TACHYCARDIAS

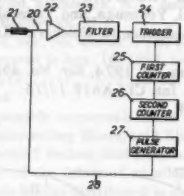
Michel Pequignot, 14 Villa Desire Filleaud, 92140 Clamart, France

Filed Oct. 11, 1974, Ser. No. 514,263

Claims priority, application France, Oct. 18, 1973, 73.37161

Int. Cl.² A61N *1/36*

U.S. Cl. 128—419 PG **11 Claims**



1. A method of electrically stimulating a heart, comprising monitoring the heart for rhythmic abnormalities, measuring the duration of a first cardiac cycle immediately preceding a second cardiac cycle during which the heart is to be electrically stimulated, determining a delay period as a function of the said first cardiac cycle, generating a train of *n* consecutive stimulation pulses, *n* being greater than two, so that the train

of *n* pulses straddles the end of the delay period running from the natural electrosystole at the beginning of said second cardiac cycle, and applying said train of *n* pulses to the heart.

3,939,845

BRASSIERE WITH SLIDING TIES, AND ARRANGED IN A GENERAL "V" SHAPE, IN PARTICULAR FOR BATHING SUITS

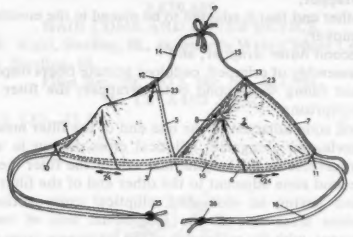
Christian Guidoni, Immeuble "Le Plein Horizon," 62 Chemin du Bois, Rillieux La Pape Rhone, France

Filed June 14, 1974, Ser. No. 479,195

Claims priority, application France, June 15, 1973, 73.22579

Int. Cl.² A41C *3/00*

U.S. Cl. 128—492 8 Claims



1. A brassiere comprising, in combination:

two fabric pouches directly connected to each other only at the inner ends of their lower edges;

three ties of adjustable length;

two of the edges of each said pouch being provided with hems which define tubes inside of which said ties of adjustable length may slide freely;

at least one of said tubes being common to the two pouches;

one of said three ties is substantially horizontal and common to the two pouches and slides inside the lower hems of said pouches which define the common tube;

the length of said ties being adjustable by the wearer to vary the length, the width, and, consequently, the depth and the visible area of each said pouch; and

the position of the brassiere with respect to the shoulders of said wearer also being adjusted through predetermined ones of said ties connected to each other behind the nech of the wearer.

3,939,846

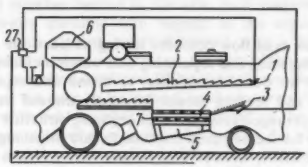
DEVICE FOR MONITORING AND CONTROLLING THE RELATIVE FLOWS AND LOSSES OF GRAIN IN A GRAIN COMBINE THRESHER

Vladimir Kirillovich Drozhzhin, 3 Artilleriisky proezd, 32; Alexandr Pavlovich Sergeev, ulitsa Frunze, 55a, kv. 67; Vladimir Pavlovich Shevchenko, ulitsa P. Tolyatti, 42, kv. 24; Vitaly Evdokimovich Buyanov, ulitsa Dzerzhinskogo, 177, kv. 2; Viktor Ivanovich Bolotov, ulitsa Sverdlova, 43, kv. 7; Viktor Mikhailovich Yakut, ulitsa Portovaya, 1, kv. 32; Jury Tikhonovich Polenov, prospekt Ukrainsky, 25, kv. 4, all of Taganrog; Nikolai Nikolaevich Luchinsky, ulitsa Vavilova, 56, kv. 188; Mai Mikhailovich Dvorkind, ulitsa Vavilova, 56, kv. 180; Sergei Alexeevich Alferov, ulitsa Mikhailova, 33, korpus 3, kv. 81, all of Moscow; Alexandr Fedorovich Morozov, ulitsa Tsentralnaya, 9, kv. 7, Solnechnogorsk Moskovskoi oblasti; Alexandr Trofimovich Anashkin, ulitsa Trudovykhrezervov, 2-1, kv. 25; Isaak Zinovievich Avrutin, Oktyabrskaya ploschad, 2, kv. 48, both of Taganrog, U.S.S.R., and Tatyana Moiseevna Voronova, ulitsa Kirova, 24, kv. 71, Moscow, all of U.S.S.R.

Filed June 27, 1974, Ser. No. 483,513

Int. Cl.² A01F *12/00*

U.S. Cl. 130—27 R 4 Claims



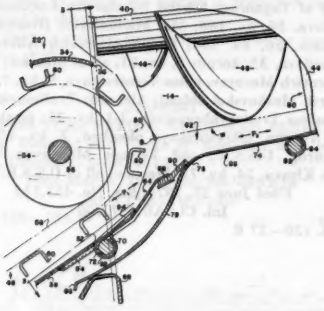
4. Device for controlling the rates of flow of grain supplied to the hopper of a grain combine and the losses in the latter, comprising first means mounted on the combine at a location where grain is lost for detecting the amount of grain lost from the combine and having an output and generating an output signal proportional to the amount of grain lost at said location; second means mounted on the combine at a location along the path which the grain moves on the way to the hopper for detecting the amount of grain supplied to the hopper of the grain combine and having an output and generating an output signal proportional to the amount of grain supplied to the hopper; electronic circuit means having first and second inputs and an output, said first input of said electronic circuit means being connected to said output of said first means for receiving a signal proportional to the amount of lost grain, said second input of said electronic circuit means being connected to said output of said second means for receiving a signal proportional to the amount of grain supplied to the hopper, said electronic circuit means generating a signal proportional to the ratio of said signals supplied by said first and second means; and an indicator having an input and an output and a scale calibrated in units characterizing the relative magnitudes of grain flow and losses, said input of said indicator being connected to said output of said electronic circuit means for receiving said signal proportional to said ratio and transferring its value through the output to said scale to provide an indication of the relative values of grain stored and lost in the combine.

3,939,847

COMBINE WITH IMPROVED FEED PLATE

James E. Straeter, Bresse, Ill., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Mar. 24, 1975, Ser. No. 561,406
Int. Cl.² A01F 7/06
U.S. Cl. 130—27 T 10 Claims



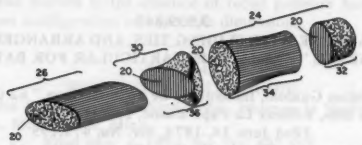
1. In an axial flow combine having at least one axially arranged threshing and separating unit which includes elements arranged for coaction together to thresh and separate crop material and feeding means forwardly thereof having peripherally-arranged crop material engaging structure and being operable for feeding crop material to said threshing and separating elements, said combine further having means for elevating crop material from the field to said feeding means and being disposed generally forwardly of said threshing and separating unit, said elevating means including a bottom wall inclined upward and rearward and having an upper terminal end located in a position spaced below a forward end of said engaging structure of said feeding means and operable means disposed above said bottom wall and having a rear discharging portion extending upwardly beyond said terminal end of said bottom wall to adjacent said forward end of said engaging structure for conveying crop material rearwardly and upwardly along said bottom wall to a discharge location above said terminal end thereof and spaced below said forward end of said engaging structure, the improvement which comprises: feed ramp means for guiding crop material from said elevating means of said combine to said feeding means and then to said threshing and separating elements thereof, said feed ramp means including a forward portion which extends generally longitudinally from proximate said terminal end of said bottom wall to an upper end of said forward portion being spaced below, rearwardly of and in close proximity to, a lower boundary of the working area of said forward end of said engaging structure of said feeding means, said forward ramp means portion together with said discharging portion of said conveying means and said forward end of said engaging structure of said feeding means defining an upward and rearward inclined passageway for crop material from said terminal end of of said bottom wall to said engaging structure, said forward ramp means portion defining a lower boundary of said inclined passageway and being adapted to guide crop material from said terminal end of said bottom wall through said inclined passageway upon operation of said conveying means so as to postpone or delay the discharge of said crop material by said discharging portion of said conveying means until leading portions of said discharging crop material are at least partially engaged by said forward end of said engaging structure of said feeding means.

3,939,848

SMOKING ARTICLE

George Le Roy, 9649 LeClaire Ave., Skokie, Ill. 60076

Filed Jan. 16, 1975, Ser. No. 541,637
Int. Cl.² A24B 15/027; A24D 1/04; A24F 1/02
U.S. Cl. 131—10 R 4 Claims



1. An improved smoking article comprising:
a generally cylindrical, combustible first outer wrapper having first and second ends;
an amount of tobacco disposed in and filling the first outer wrapper between its ends and adapted, with the first outer wrapper, to be burned; and
filter means for filtering products of combustion which pass there through in a direction parallel to the longiudinal axis of the filter means and which result from the burning of the tobacco, the filter means comprising:
one end that is connected with a first end of the first outer wrapper;
another end that is adapted to be placed in the mouth of the smoker;
a second outer wrapper; and
an assembly of crimped, cellulose acetate fibers disposed in and filling the second outer wrapper; the filter means comprising:
a first zone adjacent to the one end of the filter means and having an elongated, elliptical cross-section in a plane transverse to the longitudinal axis of the filter means;
a second zone adjacent to the other end of the filter means and having an elongated, elliptical cross-section in a plane transverse to the longiudinal axis of the filter means, with the major axis of the transverse cross-section of the second zone being disposed at an angle of substantially ninety degrees to the major axis of the transverse cross-section of the first zone; and
a third zone disposed between the first and second zones and having a varying, non-circular cross-section containing fibers transverse to the central longitudinal axis wherein said third zone provides a smooth transition between the first and second zones.

3,939,849

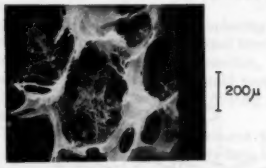
FILTER ELEMENTS

Samuel Baxter, Penhow, England, and Pushpkumar Dewanmal Changani, Glasgow, Scotland, assignors to Monsanto Chemicals Limited, London, England

Continuation of Ser. No. 193,710, Oct. 29, 1971, abandoned. This application July 8, 1974, Ser. No. 486,549
Claims priority, application United Kingdom, Nov. 18, 1970, 54806/70; Apr. 16, 1971, 9646/71
Int. Cl.² A24B 15/027; A24D 1/04; A24F 1/02
U.S. Cl. 131—269 18 Claims

1. A rod shaped cigarette filter comprised of a polypropylene foam or a foam of high density polyethylene, said foam having a substantially open-cell structure wherein more than half of the cells present contain cell walls which are perforated, and wherein the microstructure of said foam is characterized by the presence of numerous fine fibre-like elements having thicknesses within the range of from about 0.1 to 2 microns which bridge across said perforations in the cell walls, said fibre-like elements being interconnected with each other or with the part of the cell wall that forms the boundary of the perforation and thereby being substantially free of loose ends; said cigarette filter having a TPM filtration efficiency of from

20 to 60 percent, a ΔP_{10} of from about 0.5 to 15 centimeters water gauge, and a hardness of from about 50 to 100 percent, said percent hardness being determined by subjecting a 120 millimeter length sample of said cigarette filter rod of predetermined initial diameter to compression under a 300 gram load for 15 seconds and thereafter measuring the rod diameter



to determine the decrease in initial diameter, the percent hardness is then calculated from the equation:

$$\text{Percent hardness} = [(D - A)/D] \times 100$$

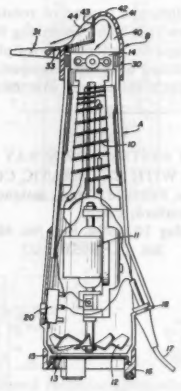
wherein D represents the initial diameter of the rod and A represents the decrease in said initial diameter following 15 seconds under said load.

3,939,850

HAIR COMB AND DRYER DEVICE

John F. Wahl, Sterling, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.

Filed Dec. 10, 1973, Ser. No. 422,991
Int. Cl.² A45D 24/00
U.S. Cl. 132—11 R **6 Claims**



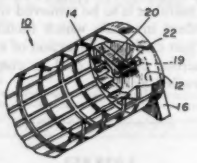
1. In a hair comb and drying device, an elongated tubular casing, means contained within said casing for projecting air therethrough and discharging air through an outlet at one end thereof, and a comb structure at said one end of said casing including a row of teeth extending in a plane which makes an angle of substantially 90° with the axis of said casing, said structure having an internal passageway connecting with said outlet and leading to an air discharge opening which is above the transverse plane of said row of teeth, said discharge opening facing toward said row of teeth, whereby upon the passing of air through said casing and through said passageway the air is directed along the top of said row of teeth.

3,939,851

SINGLE STEP HAIR CURLER WITH INDEPENDENT SELF-CONTAINED SUPPORTING AND SECURING MEANS

Thomas J. Parlagreco, 5 Ferris Court, Ho-Ho-Kus, N.J. 07423

Filed Apr. 9, 1974, Ser. No. 459,289
Int. Cl.² A45D 2/12
U.S. Cl. 132—34 R **9 Claims**



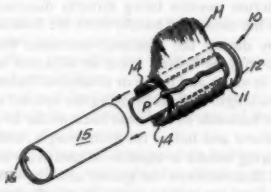
1. A hair roller assembly having independently rotatable end supports with at least one of the end supports restricted as to the freedom of rotation, said roller assembly including: (a) an intermediate roller member of generally cylindrical configuration; (b) a closed end member of disc-like configuration secured to each of the ends of the intermediate roller member so as to seat in and close the open end; (c) a short axle rotatably carried in each of the closed end members, said axle independently movable with respect to the other axle; (d) a support member carried by the axle, each support member independently movable with respect to the other support member, each support member formed with a broad base support portion adapted to rest on the hair of the user's head and while in resting condition lifting the roller sufficiently for the hair of the user to be wound on the intermediate roller member while said member is being rotated on the axles; (e) at least one ratchet gear carried by one of the closed end members and the associated end of the roller member, and (f) a ratchet engaging pawl carried by and with the support member and moved as the support member moves in an arch around the axis of the intermediate roller member, this pawl adapted to prevent rotating of the roller with the hair thereon it until the desired tension has been developed in the hair wound on the roller after which the rotation of the intermediate roller is terminated with the pawl engaging this ratchet gear and preventing unwanted reverse rotation of the roller.

3,939,852

HAIR CURLING METHOD AND CURLER USED THEREWITH

Mary Irwin Waite, 14101 Ventura Blvd., Sherman Oaks, Calif. 91403, and Eric L. Waite, 14808 Clark St., Van Nuys, Calif. 91401

Filed Oct. 12, 1973, Ser. No. 405,886
Int. Cl.² A45D 2/02
U.S. Cl. 132—39 **5 Claims**



1. A hair curler comprising:
a first member; and
a second member, said second member being tubular having at least one open end, said first member being tele-

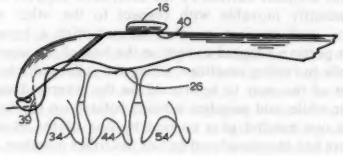
scopingly receivable within said second member establishing a close fitting relationship therebetween, said second member having a plurality of longitudinal slots connecting with one end of said second member and extending to a point close to but spaced from the other end of said second member, said slots being spaced apart with the portions of said second member between adjacent said slots forming inwardly deflectable fingers, a lock of hair is to be tightly wound upon said second member and said first member is to be removed which permits said fingers to deflect inwardly which facilitates removal of the resultant hair curl after insertion of a hair pin through a said slot across the hair curl to clamp the curl and maintain its curled position.

3,939,853

DENTAL FLOSSER

Michael E. Spanondis, 685 Hope St., Tarpon Springs, Fla. 33589

Filed Sept. 4, 1974, Ser. No. 503,171
Int. Cl.² A61C *15/00*
U.S. Cl. 132—91 **9 Claims**



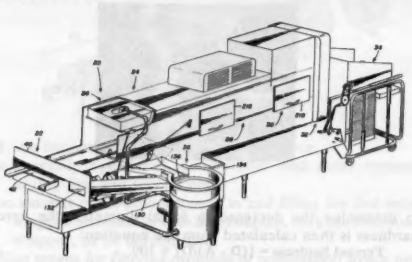
1. A dental flosser for cleaning and removing debris and dental plaque from the opposed surfaces of adjacent teeth comprising in combination an elongated handle having a longitudinal axis, a bifurcated head provided integrally at one end of said handle, and including a pair of downwardly, extending spaced and curved arms having concaved and notched extremities for receiving a length of dental floss, and floss anchoring means comprising a button affixed to the top surface and at the base of the elongated handle, said floss anchoring means having an undersurface which is tapered outward from its center, and a bulbed fulcrum portion being formed as an integral protrusion on the bottom surface of the elongated handle, said fulcrum portion being directly disposed on the opposite face of the elongated handle from the floss anchoring button, whereby during the cleaning operation the bulbed fulcrum portion may be seated upon an adjacent tooth and allowed to rock in an up and down or rotational fashion on the tooth such that a length of floss bridging the spaced arms may project onto the backside of the next back molar to clean the entire surface above and below the gum margin, and wherein said floss anchoring means is capable of positively securing a length of dental floss between the spaced arms by virtue of the ends being wrapped around one side of the floss anchoring means and pulled tightly transverse to the longitudinal axis of the dental flosser, said spaced arms having interior tip surface portions which are flared outwardly from the longitudinal axis of the dental flosser to protect the gums from injury when a length of floss bridging the spaced arms is engaged between adjacent teeth during the cleaning operation.

3,939,854

TRAY WASHING SYSTEM

Lawrence Pete Kitterman, 1309 Woodway, Hurst, Tex. 76053, and Howard Gene Rice, 1109 Hadrian Court, Irving, Tex. 75060

Division of Ser. No. 89,401, Nov. 13, 1970, Pat. No. 3,798,065.
This application Dec. 14, 1973, Ser. No. 424,685
Int. Cl.² B08B *3/00*
U.S. Cl. 134—57 R **4 Claims**



1. In a tray cleaning system, a tray inverting mechanism comprising:

means for moving a tray along a predetermined path;

at least one rigid arm supported for pivotal movement about a horizontal axis and for cooperation with the moving means to pivot the tray from a first orientation wherein the food receiving surface of the tray faces upwardly to a second orientation wherein the food receiving surface extends vertically;

at least one second rigid arm pivotally supported for pivoting the tray from the second orientation to a third orientation wherein the food receiving surface faces downwardly; and

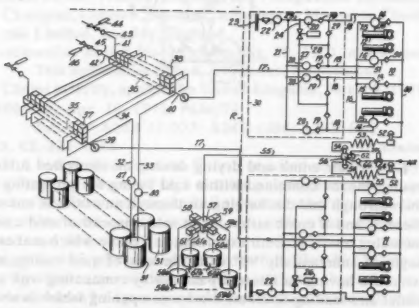
drive means including a source of rotational motion and lever means drivingly interconnecting the source of rotational motion and the second arm for pivoting the second pivotally supported arm into engagement with the tray when the tray is in the second orientation.

3,939,855

RECOVERY SYSTEM FOR SPRAY PAINTING INSTALLATION WITH AUTOMATIC COLOR CHANGE

Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Stratford, Conn.

Filed May 10, 1974, Ser. No. 468,973
Int. Cl.² B05B *5/02*
U.S. Cl. 137—15 **5 Claims**



1. A method of performing a color change cycle for a paint spray installation of the type including a paint supply means, a paint spray station and discharge conduit means for receiv-

ing the fluids discharged during a color change operation, which comprises

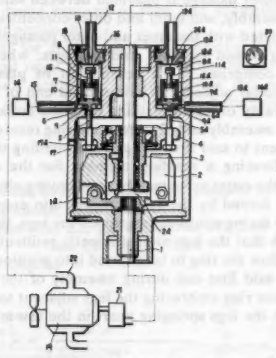
a. communicating with the paint spray station by separate supply and purge conduit means,
b. initially supplying coating material of a selected color to said spray station through said supply conduit,
c. during a color change cycle, initially supplying cleaning fluids to the paint spray station through the supply conduit, and subsequently supplying coating material of a new color through said supply conduit,
d. the initially supplied cleaning fluids displacing coating material of the first color in advance thereof through said supply conduit and into said discharge conduit,
e. displacing said cleaning fluids through said supply conduit and into said discharge conduit by a coating material of a new color,
f. continuing the last mentioned displacement until the coating material of said new color flows into said discharge conduit,
g. determining the presence of the front of the new color of coating material in said discharge conduit, and
h. thereafter blocking said discharge conduit at locations upstream and downstream of the front of the new coating material.

3,939,856

ROTATIONAL SPEED RESPONSIVE TYPE FLUID PRESSURE SIGNAL CONTROL VALVE

Yasuhiro Yamamoto, Kariya, and Michikatsu Naito, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 11, 1974, Ser. No. 450,236
Claims priority, application Japan, Mar. 12, 1973, 48-29268
Int. Cl.² G05D *13/10*; F02P *5/04*
U.S. Cl. 137—54 **1 Claim**



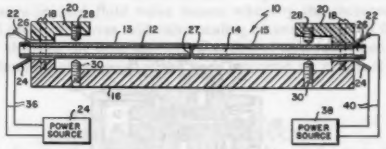
1. A rotational speed responsive type fluid pressure signal control valve comprising, a drive shaft for transmitting rotating force, fly weights connected with said drive shaft, means combined with said fly weights for reciprocating according to the rotation of said fly weights including a push rod member for operating a valve body means, fluid passage means connected to a vacuum pressure source, actuators and atmospheric area, and valve body means associated with said fluid passage means for operation by said push rod member and said reciprocating means for opening and closing said fluid passage means according to the operation of said reciprocating means to provide a fluid pressure signal including a first valve body member associated with said push rod member to connect said actuators with said atmospheric area and a second valve body member comprising a dished spring valve thereby providing hysteresis of valve operation and for cutting off connection between said vacuum pressure source and said actuators.

3,939,857

DUAL PIEZOELECTRIC FLUID JET TRANSFER VALVE

Henry J. Bernaerts, R.F.D. 10, Box 1610, Annapolis, Md. 21401

Filed June 24, 1975, Ser. No. 589,739
Int. Cl.² G05D *16/20*; F15B *5/00*
U.S. Cl. 137—83 **7 Claims**



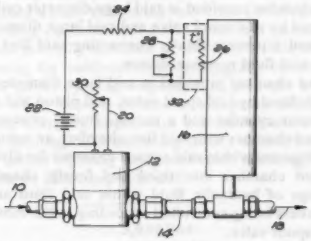
1. A dual piezoelectric fluid jet transfer valve comprising:
a pair of piezoelectric bender tubes each mounted at one end for cantilever action and the free ends coaxially opposing each other;
means for mounting said tubes at their outer, ends; and,
means for applying controlled amounts of electrical charge independently to each of said bender tubes on selected faces to cause said free end to move in a plane;
whereby when the bender tubes are unenergized or energized to the same magnitude and polarity fluid transfer will occur, but when energized to a different magnitude and/or polarity, fluid transfer will not occur.

3,939,858

ASSEMBLY AND METHOD OF OBTAINING A CONTROLLED GAS MIXTURE

Dan B. LeMay, Palos Verdes Estates, Calif., assignor to Tylan Corporation, Torrance, Calif.

Filed Sept. 13, 1974, Ser. No. 505,893
Int. Cl.² G05D *11/13*
U.S. Cl. 137—90 **8 Claims**



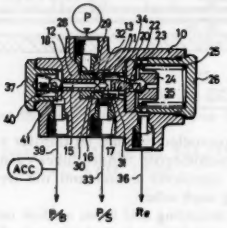
1. Apparatus for obtaining a controlled mixture of a first gas and a carrier gas, comprising:
a mass flow controller for delivering carrier gas at a controlled rate of flow;
a source of said first gas which emits said gas at a mass flow rate which is a repeatable function of the ambient temperature of said source;
means for adding said first gas into carrier gas delivered by said mass flow controller for dilution in predetermined proportionality with said carrier gas; and
means for automatically changing the flow rate of said mass flow controller in accordance with variations in said ambient temperature of said source to compensate for temperature-dependent changes in the emission rate therefrom whereby to substantially maintain their proportionality.

3,939,859

UNLOADER VALVE WITH FLOW DIVIDER

Atsumi Ueda, Toyota, and Uichiro Kobashi, Okazaki, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 22, 1974, Ser. No. 435,601
Claims priority, application Japan, Feb. 13, 1973, 48-18011
Int. Cl.² G05D 11/00
U.S. Cl. 137—118 2 Claims



1. An unloader valve with flow divider having a fluid pressure source with a pump and a reservoir for providing a substantially constant hydraulic fluid pressure, a first fluid pressure circuit with an accumulator, and a second fluid pressure circuit, comprising:

a main body having a large diameter cylinder and a small diameter cylinder coaxial therewith,

an annular spool valve slidably inserted into said large diameter cylinder and having an inner bore;

a piston slidably inserted into said small diameter cylinder and in the bore of said spool valve, respectively;

a first chamber provided in said large diameter cylinder and defined by said spool valve and said large diameter cylinder and a passage fluidly connecting said first chamber with said fluid pressure source;

a second chamber provided in said large diameter cylinder and defined by said spool valve, said piston and said large diameter cylinder and a passage fluidly connecting said second chamber with said first chamber, an annular member disposed within said second chamber for dividing said second chamber into third and fourth chambers, the passage of hydraulic fluid within said third and fourth chambers being controlled according to the movement of said spool valve,

orifice means within the fluid passage between said first chamber and said second chamber;

spring means disposed within said second chamber and biasing said spool valve into said first chamber;

first valve means controlling the communication between said fluid pressure source and said first fluid pressure circuit via said orifice means, said spool valve controlling the communication between said first chamber and said second fluid pressure circuit; and

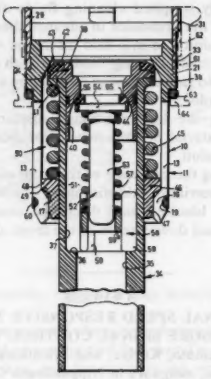
second valve means controlling the communication between said second chamber and said reservoir of said fluid pressure source, said second valve means being operated by actuation of said piston according to the pressure in said accumulator and said second chamber when the pressure within said second chamber reaches a preset value and being closed by actuation of said piston when the pressure in said accumulator falls below a preset value.

3,939,860

CLOSURE UNITS FOR CONTAINERS

Cyril George Golding, Sedgeley, England, assignor to GKN Sankey Limited, Bilston, England

Filed Apr. 3, 1975, Ser. No. 564,757
Claims priority, application United Kingdom, Apr. 9, 1974, 15601/74
Int. Cl.² B67D 5/54; B65D 83/00
U.S. Cl. 137—212 14 Claims



1. A closure unit for an opening in a container comprising a cup assembly having first and second opposite ends and adapted to be received in the opening, a downtube having an end portion within the assembly and projecting from said first end of the assembly, the down-tube providing an inner passage while an outer passage is provided between said end portion and the assembly, and inner and outer concentric valve members associated with the inner and outer passages respectively and spring biased to close said passages, wherein the cup assembly comprises (1) a component of plastics material having a collar adjacent to said second end of the assembly and a plurality of legs projecting from the collar to said first end of the assembly and (2) a reaction ring received within the legs adjacent to said first end and surrounding the downtube, the ring forming a reaction member for the spring means acting on the outer valve member and having abutment means which are forced by the spring means into engagement with oppositely facing abutment means on the legs, the component being such that the legs are sufficiently resilient to be sprung apart to allow the ring to be inserted into position between the legs from said first end during assembly of the closure unit, and an outer ring embracing the legs adjacent to said first end to prevent the legs springing apart in the assembled closure.

3,939,861

FIRE HYDRANT

William J. Thompson, 8133 Ridge Ave., Philadelphia, Pa. 19128

Filed July 19, 1974, Ser. No. 490,212
Int. Cl.² E03B 9/04; F16L 37/28
U.S. Cl. 137—299 7 Claims

1. In a fire hydrant having a barrel portion located above ground and provided with a laterally extending flow outlet nozzle, the improvement comprising:

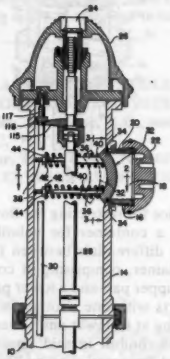
valve means located within the barrel portion for controlling the flow of water through the outlet nozzle,

said valve means including a valve member movable between a closed position in an outlet opening extending across the upstream end of the outlet nozzle to block the flow of water from the interior of the barrel portion into the outlet nozzle and to prevent the insertion of articles into the barrel portion through the outlet nozzle and an

open position spaced away from the upstream end of the outlet nozzle to permit the flow of water from the interior of the barrel portion into the outlet nozzle and spring means biasing said valve member towards said closed position, and

valve actuator means for moving said valve member from said closed position to said open position away from the outlet nozzle against the bias of said spring means,

said valve actuator means comprising a collar means adapted to be mounted on the outlet nozzle of the fire hydrant, and a valve actuating member mounted on said



collar means and arranged to move the same from said closed position to said open position as said collar means is mounted in said position on the fire hydrant,

said valve means being adapted to be located entirely within the barrel portion of the fire hydrant with only the valve member being exposed to view and accessible through the outlet nozzle, and

guide means for guiding said valve member between said closed and open positions, said guide means extending transversely across the barrel portion and including a plurality of pins slidable within cooperating sleeves.

3,939,862

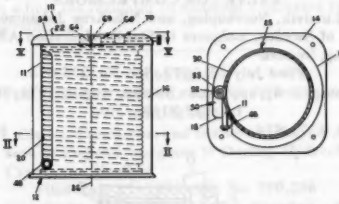
HOSE REEL

William M. Booth, Grand Haven, Mich., assignor to Edward E. Brondyke, Holland, Mich.

Filed May 22, 1974, Ser. No. 472,144

Int. Cl.² B65H *75/34*

U.S. Cl. 137—355.16 **16 Claims**



1. Hose reel apparatus comprising in combination, a cylindrical hose reel; support means for rotatably supporting said reel on an axis of rotation; winding means for directing and guiding a hose around and along said reel as said reel is rotated on said axis including fluid motive power means on said support means for rotating said reel about said axis; fluid valve means for controlling operation of said fluid motive power means and for controlling fluid flow to a hose on said reel when the hose is connected to said fluid valve means, said fluid valve means having a first fluid conducting means for admitting and directing fluid through the hose, a second fluid conducting means for directing said fluid through said fluid motive power means for rotating said reel to wind the hose on said reel prior to the passage of the fluid through the hose, and movable valve sealing means responsive to a fluid pressure increase for closing said first and second fluid conducting means and shutting off the flow of said fluid through said fluid motive power means and the hose on said reel; and fluid control means responsive to the winding of a predetermined amount of hose on said reel for providing an increase in fluid pressure in said fluid valve means whereby the increase in fluid pressure moves said valve sealing means to shut off fluid flow through the hose and stop rotation of said reel when the predetermined amount of the hose is wound on said reel.

3,939,863

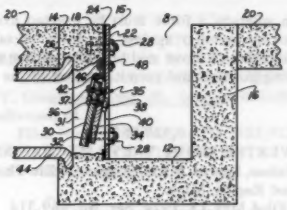
BASEMENT SUMP CONSTRUCTION

John Crosby Robison, Shawnee Hills, Ohio, assignor to Mildred M. Robinson, Shawnee Hills, Ohio; a part interest.

Filed July 10, 1974, Ser. No. 487,299

Int. Cl.² F16K *15/00*

U.S. Cl. 137—357 **3 Claims**



1. A basement sump construction comprising, in combination, a sump chamber including a top access opening, a sump side wall provided with an inner wall surface and a drain outlet opening; a trap frame plate mounted on said inner wall surface and including a plate side facing said drain outlet opening and a trap opening communicating with said drain outlet opening; a trap door pivotally mounted to said frame plate above said trap opening for unidirectional opening movement towards said drain outlet opening responsive to pressure exerted on said door when water is present in said sump chamber, said door being normally disposed in a closed position covering said trap opening; and mounting means accessible through said top access opening and removably securing said trap frame plate to said sump side wall.

3,939,864

VALVE LOCK

James F. Donnelly, Leicester, Mass., assignor to Jamesbury Corporation, Worcester, Mass.

Filed May 29, 1974, Ser. No. 474,453

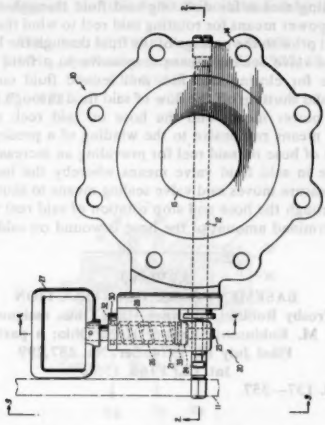
Int. Cl.² F16K *35/04*

U.S. Cl. 137—385 **5 Claims**

1. A lock for a valve having a stem, the opening and closing of the valve being controlled by rotation of the stem, said lock comprising:

a housing having a first opening therein to receive the stem, a second opening in said housing, a locking member disposed in said second opening, the longitudinal axis of said second opening being substantially perpendicular to and offset from the longitudinal axis of said first opening, said locking member including an elongated terminal portion which in the closed position of the locking member extends beyond said longitudinal axis of said first opening so that the elongated periphery of said terminal

portion is disposed adjacent to a flat on the stem to prevent rotation thereof, said locking member also including biasing means to bias said terminal portion into its locking



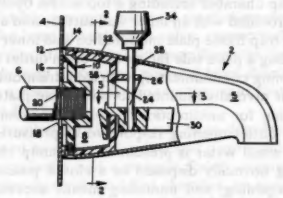
position whereby a force must be exerted axially along said locking member against the force of said biasing means in order to move said terminal portion away from its locking position and permit rotation of the stem.

3,939,865

DIVERTER SPOUT VALVE MECHANISM

Merritt J. Nelson, Sparta, Mich., assignor to Zin-Plas Corporation, Grand Rapids, Mich.

Filed May 13, 1974, Ser. No. 469,314
Int. Cl.[2] F16K *15/00*
U.S. Cl. 137—467 7 Claims



1. In a diverter spout comprising a hollow pressure chamber having an inlet and a substantially vertical wall with an outlet; a vertically movable valve member including a face place mounted for reciprocable movement between an open position wherein the face plate is substantially below the outlet so as to permit liquid to flow from the pressure chamber through the outlet, and a closed position wherein the face plate is raised so as to block the outlet from the inside of the pressure chamber; and a manually actuatable valve stem means connected to the valve member for opening and closing the valve member; an improvement in said valve member which comprises:

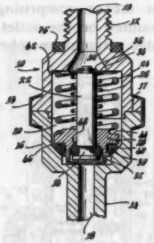
the valve member being integrally formed of a light weight plastic material and the face place thereof having a downwardly curved frontal cavity at an upper portion of said face plate for reacting with the flow of water through the outlet such that the water flowing through the outlet applies a downward force on the valve member to hold it in the open position when water flows through the outlet.

3,939,866

FUEL SAVING DEVICE

Enrico Pignatelli, Rome, Italy, assignor to COM. E. IRA, S.r.C., Padova, Italy

Filed Jan. 21, 1974, Ser. No. 435,307
Int. Cl.[2] F16K *17/04*
U.S. Cl. 137—493.4 3 Claims



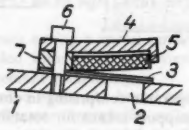
1. A valve device for restricting the flow of gaseous material into and out of a container for volatile material owing to relative pressure differentials between the interior and exterior of said container, comprising in combination a housing consisting of an upper part and a lower part, a ferrule connecting said two parts with one another, a tank conduit in said lower part opening at its lower end toward the interior of said container, a vent conduit in said upper part opening at its upper end toward the exterior of said container and having a threaded outer surface, an enlarged cavity within said lower and upper parts communicating with said vent conduit and said tank conduit, an annular pressure valve gate arranged on the bottom of said cavity, a shaft inserted into a central bore of said annular gate and extending upwardly in the center of said cavity and downwardly toward the upper end of said tank conduit, an annular groove provided at the lower end of said shaft within said annular gate, a first O-ring seal arranged in said annular groove to contact a beveled annular inner surface of said gate, a second O-ring seal placed in an outer annular groove of said gate to contact a beveled annular lower wall surface of said cavity, a pressure relief spring arranged around said shaft within said cavity and abutting at its lower end on the upper surface of said annular gate and at its upper end on the upper surface of said cavity, a stop washer fastened to the upper end of said shaft by means of a groove-clip connection, a vacuum relief spring abutting at its lower end on the upper surface of said annular gate and at its upper end on said stop washer.

3,939,867

VALVE FOR COMPRESSORS

Bertil Lundvik, Norrkoping, and Nils-Arne Johansson, Aby, both of Sweden, assignors to Stal-Refrigeration AB, Norrkoping, Sweden

Filed July 25, 1972, Ser. No. 275,074
Claims priority, application Sweden, Aug. 2, 1971, 9844/71
Int. Cl.[2] F16K *15/00*
U.S. Cl. 137—514 5 Claims



1. In a valve having a valve plate defining an aperture, a flexible longitudinally extending valve body normally seated and connected at one end thereof to the valve plate over the aperture, a longitudinally extending valve catcher connected

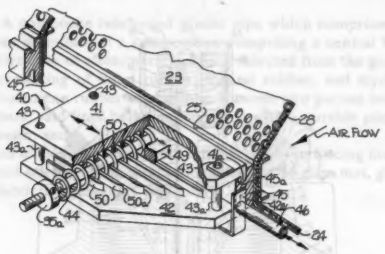
at said one end thereof to the valve plate, the valve catcher being positioned above the valve body and curving away from the valve body, and the valve catcher acting as a limiting support for the valve body when the latter is flexed, the improvement in the valve catcher providing a gradual curve of the valve body when flexed and reducing the strain therein while dampening the valve body impact and operation noise, comprising a layer of resilient material retained by said valve catcher and extending along the entire length of the valve catcher portion positioned over the length of the flexible portion of the valve body, the resilient layer being positioned to permit the valve body to flex away from the aperture along a gradually increasing curve in response to increased pressure.

3,939,868

ADJUSTABLE AIR VOLUME REGULATOR FOR AIR-CONDITIONING SYSTEMS

Hillard Glenn Logsdon, Charlotte, N.C., assignor to Aeronca, Inc., Pineville, N.C.

Filed Mar. 8, 1974, Ser. No. 449,441
Int. Cl.² F16K *15/14, 17/30*
U.S. Cl. 137—517 **9 Claims**



1. In an air volume regulator comprising a housing defining a passageway for the flow of air therethrough, valve means mounted for movement in said housing for adjustably restricting the air flow therethrough, and a coil compression spring cooperating with said valve means for exerting an opening bias on the valve means in opposition to a closing bias exerted thereon by the pressure of the air in the housing whereby said valve means is adapted for maintaining the air flow through the housing at a substantially constant rate, the combination therewith of spring adjustment means carried by said housing and positioned alongside of said coil spring and including means normally positioned out of engagement with said coil spring but movable into said spring from opposite sides thereof between a plurality of the turns of the spring for varying the number of working turns in the coil spring so as to thereby adjust the regulator to maintain a different rate of air flow therethrough.

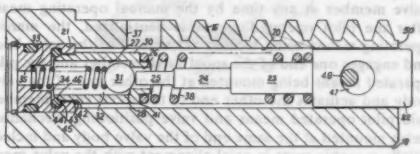
3,939,869

HYDRAULIC CONTROL VALVE FOR REMOTE RECEIVER

Peter G. Clarke, Crewkerne, and Bernard P. Rayner, Beaminster, both of England, assignors to Sterling Hydraulics Limited, Crewkerne, England

Filed Aug. 21, 1973, Ser. No. 390,256
Claims priority, application United Kingdom, Aug. 30, 1972, 40255/72; Nov. 6, 1972, 51066/72
Int. Cl.² F16K *31/00, 17/00*
U.S. Cl. 137—595 **16 Claims**

1. A hydraulic control valve for transmitting fluid under pressure from a fluid pressure source to an actuating line of a receiver, said control valve comprising a housing, a bore in said housing, first means carried by said housing for coupling one end of said bore to a fluid pressure source and second means carried by said housing for coupling an opposite end of said bore to an actuating line, an actuating element slidably mounted in said bore, a manually movable operating member operatively connected to said actuating element for shifting said actuating element in said bore with movement of said operating member causing said actuating element to slide in said housing to transmit fluid under pressure from said first means to said second means, fluid flow passage means through



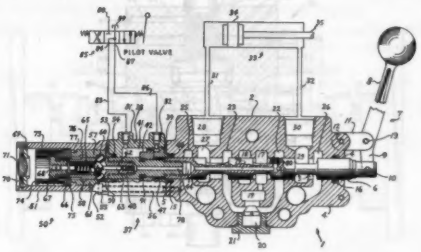
said actuating element for placing said first means and said second means in fluid communicating relation, a pressure relief valve carried by said actuating element normally closing said fluid flow passage means and for relieving excess pressure at said second means, and cooperating synchronizing means carried by said actuating element and said housing for automatically opening said fluid flow passage means at a predetermined point in the shifting of the actuating element.

3,939,870

COMBINATION MANUAL AND PILOT OPERATED DIRECTIONAL CONTROL VALVE

Anthony V. Giugliano, Lisle, Ill., assignor to Deltrol Corporation, Bellwood, Ill.

Filed Nov. 14, 1974, Ser. No. 523,912
Int. Cl.² F15B *13/01*
U.S. Cl. 137—624.27 **2 Claims**



1. In a fluid power system including a combination manually operable and pilot operable spool valve, the combination of, a multi-ported spool valve body having two ends and receiving a double ended spool valve member axially movable in the valve body relative to its two ends, manual operating means at one end of the valve body for engaging the corresponding end of the spool valve member for actuating same, pilot operated means associated with the spool valve member for actuating same independently of the manual operating means, said pilot operated means including a piston and a cylinder therefor arranged to provide a first pressure chamber on one side of the piston, and a second pressure chamber on the other side of the piston whereby the pilot operated means is operable to drive the spool valve member in both directions, means including pilot valve means for controlling pressures in said pressure chambers, said pilot valve means being constructed and arranged to selectively apply pressures to said chambers to cause positive pressure powered movement of the spool valve member in either one direction or the other, said pilot valve means also having a neutral position arranged to neutralize the pilot operated means by neutralizing said pressure chambers to permit free and independent movement of the spool valve member when the pilot valve means is in said neutral position,

a valve positioning mechanism also associated with the spool valve member, said mechanism including yieldable detent means arranged to hold the spool valve member in position after movement by the pilot operated means and subsequent neutralization thereof, said mechanism also including automatic means for releasing said detent means and moving the spool valve member in response to a predetermined condition, said yieldable detent means allowing movement of the spool valve member at any time by the manual operating means after the pilot operated means is neutralized, the manual operating means being located at one end of the valve body and engages one end of the spool valve member and the pilot operated means being mounted at the other end of the valve body and actuates the other end of the spool valve member, said pilot operated means and valve positioning mechanism being mounted at the same end of the valve body and include axially movable parts in axial alignment with the valve member, said pilot operated means being mounted between the valve member and valve positioning mechanism, said pilot operated means including a movable piston rod actuated by the piston, said rod serving to connnect the valve member with the valve positioning mechanism.

3,939,871

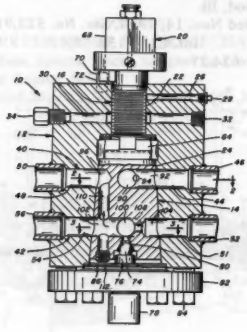
BURNER BLOCK ASSEMBLY

Fred D. Dickson, Sulphur Springs, Tex., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1975, Ser. No. 544,801

Int. Cl.[2] F16K *11/083*

U.S. Cl. 137—625.47 **2 Claims**



1. A burner block valve assembly for selectively distributing oil and steam to a steam atomized oil burner, comprising:

a valve body having a bore therein;

a valve plug in the bore rotatable between first and second positions;

an oil inlet in the body communicating with the bore for fluid connection with the oil source;

a steam inlet in the body communicating with the bore for fluid connection with the steam source;

an oil bypass port in the body communicating with the bore for fluid connection with the oil source;

a first outlet port in the body communicating with the bore for fluid connection with the burner;

a second outlet port in the body communicating with the bore for fluid connection with the burner;

first passage means in the plug establishing in the final position a fluid connection between the oil inlet and the first outlet for supplying oil thereof through the valve from the oil source and the burner, and establishing in the second position a fluid connection in an oil bypass route between the oil inlet and the oil bypass port;

second passage means in the plug establishing in the first position a fluid connection between the steam inlet and the second outlet for supplying steam from said steam source to the burner and including supplementary passage means for establishing the fluid connection in advance of the communication between the oil source and the burner through said first passage means, said second passage means establishing in said second position a fluid connection between the steam source and the first outlet for routing purging steam through the latter;

whereby steam and oil are supplied through the valve in the first position and purging steam is delivered to both outlets in the second position with oil flowing through the bypass route to prevent oil stagnation, return of the plug to the first position providing steam at the burner through said supplementary passage means in advance of oil.

3,939,872

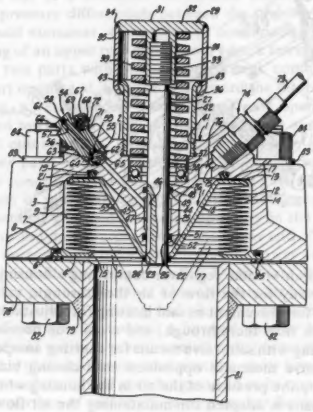
PRESSURE TRANSFER UNIT

Robert S. Wentworth, Jr., Murrieta, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 17, 1973, Ser. No. 407,364

Int. Cl. F16l *51/02*, *55/04*

U.S. Cl. 138—31 **11 Claims**

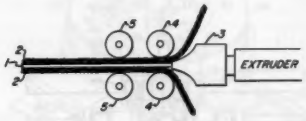


1. A pressure transfer unit comprising: a housing having walls defining an internal cavity; partition means mounted in said cavity and sealed to said walls to divide said cavity into a first pressure chamber and a second pressure chamber, and being movable to expand and contract a volume of said first chamber; said walls providing first port means for communicating said first chamber with a zone to be pressurized and second port means for communicating said second chamber with a reference source of fluid pressure; spring means biasing said partition means to move in a direction to contract the volume of said first chamber; liquid conduit means through which liquid is introduced into said first chamber, thereby moving said partition means against the bias of said spring means in a direction to expand the volume of said first chamber; valve means for limiting the volume of liquid introduced through said conduit means and received in said first chamber, said valve means having a stationary valve member and a cooperating movable valve member mounted on said partition means and actuable to close said valve means in response to movement of said partition means in a direction to expand the volume of said first chamber and to a position corresponding to a preselected volume of said first chamber, and conduit closure means in said liquid conduit means operable to close said liquid conduit means for preventing the flow of liquid outwardly from said first chamber through said liquid conduit means.

3,939,873
CORROSION RESISTANT GLASS-REINFORCED PLASTIC PIPE LINER

James W. Rinker, Orwigsburg, Pa., and William M. Jacobs, Severna Park, Md., assignors to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 391,866, Aug. 27, 1973. This application June 7, 1974, Ser. No. 477,254
Int. Cl.[2] F16L *9/16*
U.S. Cl. 138—144 9 Claims



8. A composite reinforced plastic pipe which comprises:
a. an innerliner of a composition comprising a central barrier core of elastomeric material selected from the group consisting of butyl rubber, natural rubber, and styrene butadiene rubber sandwiched between two porous members, said liner being impregnated with a curable plastic resin; and
b. an overlayer of resin impregnated glass reinforcing material selected from the group consisting of glass mat, glass fabric and mixtures thereof.

3,939,874
EXTERNAL PIPE COATINGS FOR A REINFORCED PIPE

David Gray, Newcastle, England, assignor to British Gas Corporation, London, England

Filed Feb. 19, 1974, Ser. No. 443,746
Claims priority, application United Kingdom, Feb. 27, 1973, 09486/73
Int. Cl.[2] F16L *9/04, 9/16*
U.S. Cl. 138—145 6 Claims

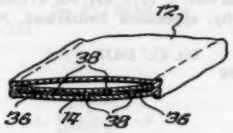
1. In a metal pipe for the transmission of a fluid under pressure, the exterior of said metal pipe being coated with a reinforced protective layer comprising coal tar for corrosion protection reinforced with a layer of reinforcement fiber, the improvement wherein resistance to cracking and failure of the protective layer due to strain on the metal pipe are increased by utilizing, as the reinforcement fiber, a layer of longitudinally extensible porous synthetic organic polymer tissue and a layer of longitudinally extensible glass based fabric, both of said layers of reinforcement fiber being wrapped around the pipe in contact with said coal tar layer whereby the coal tar passes freely through to form a second layer of coal tar on the outside of said organic polymer tissue.

3,939,875
PERMEABLE FLEXIBLE PLASTIC TUBING

Robert O. Osborn, Richmond, Va., and Donn G. Boyle, Lockport, N.Y., assignors to Boyle and Osborn, Lockport, N.Y.

Division of Ser. No. 61,661, Aug. 6, 1970, Pat. No. 3,830,067. This application Apr. 23, 1973, Ser. No. 353,238
Int. Cl.[2] F16L *11/12;* E02B *13/00*
U.S. Cl. 138—178 5 Claims

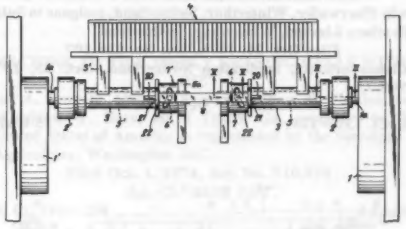
1. Flexible thermoplastic tubing which comprises: a plurality of superposed, elongated, flexible thermoplastic strips, said strips being firmly heat-sealed together along their longitudinal edges; at least one of said strips having a permeable, fibrous structure and consisting of a non-woven fabric formed of spun-bonded polyethylene fiber, communication between the inside of said tubing and the outside thereof being provided by the pores in said permeable strip.



3,939,876
WEFT-BEATING MECHANISM WITH VARIABLE-STROKE REED

Jean Robert, Bourgoin, France, assignor to Saurer Diederichs (Societe Anonyme), Bourgoin, France

Filed Apr. 12, 1974, Ser. No. 460,575
Claims priority, application France, Apr. 19, 1973, 73.15061
Int. Cl.[2] D03D *39/22*
U.S. Cl. 139—26 4 Claims



1. In a loom for weaving toweling fabric having a reed carried by a sley for beating up the weft and a sley drive having an output shaft for displacing said sley, the improvement which comprises a transmission between said shaft and said sley for varying the stroke of said reed, said transmission including a first cylindrical member connected to said drive, a second cylindrical member coaxial with said first member and connected to said sley, a cylindrical control element coaxial with and interposed between said members, said first member and said element being formed with a first set of confronting grooves and respective bridging elements received in the confronting grooves and mobile therein, said control element and said second member being formed with a second set of mutually confronting grooves and respective bridging elements received in and mobile in the confronting grooves of said second set, the grooves of one of said sets being rectilinear parallel to the axis of said members and said control element and the grooves of the other set lying on a helix centered on said axis; and means for selectively regulating the axial displacement of said control element to vary the stroke of said sley.

3,939,877

WEAVING MACHINE HAVING A BORDER FORMING MEANS

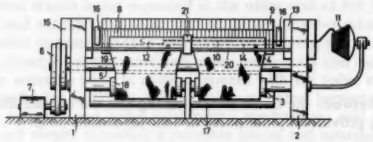
Hans Demuth, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 1, 1973, Ser. No. 411,928

Claims priority, application Switzerland, Nov. 3, 1972, 16022/72

Int. Cl.² D03D 47/40

U.S. Cl. 139—54 12 Claims



1. In a weaving machine having at least one means for forming a fabric border, said means including a housing having an opening, at least one operating element movably mounted in said housing and extending through said opening and a drive means for moving said operating element transversely of said opening, said drive means extending through said opening; a cover means disposed about said operating element and secured to said drive means for covering over said opening in each transverse position of said operating element.

3,939,878

GRIPPER SHUTTLE FOR WEFT YARNS

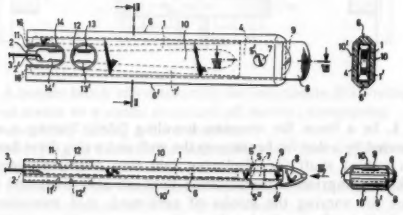
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 21, 1974, Ser. No. 516,507

Claims priority, application Switzerland, Oct. 23, 1973, 14908/73

Int. Cl.² D03J 5/06

U.S. Cl. 139—125 15 Claims



1. A gripper shuttle for picking weft yarns in a weaving machine comprising

a shuttle body housing of tubular construction having a front end;

a nose member at said front end of said housing and having inwardly and rearwardly facing inclined surfaces thereon engaging at least part of said front end of said housing;

a spigot within said front end of said housing secured to said nose member; and

means securing said spigot to said housing to press said surfaces of said housing and said nose member together under a longitudinally directed compressive force.

3,939,879

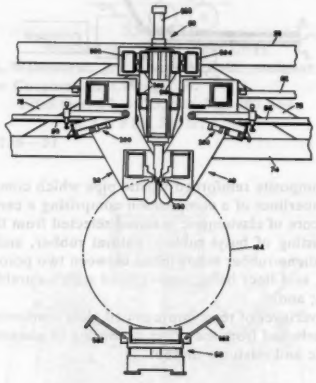
METHOD AND APPARATUS FOR FORMING PIPE REINFORCING CAGES AND LIKE CLOSED LOOP OBJECTS

Wilbur E. Tolliver, Holland, and Daniel J. Borodin, Detroit, both of Mich., assignors to New York Wire Mills Corporation, Tonawanda, N.Y.

Filed Jan. 20, 1975, Ser. No. 542,343

Int. Cl.² B21F 33/00

U.S. Cl. 140—107 50 Claims



43. A method for forming pipe reinforcing cages, pipe or like closed loop member from a formable work piece comprising:

gripping opposite ends of the work piece and advancing the ends toward one another while simultaneously rotating said ends towards one another such that the work piece is formed to define a closed loop as the ends thereof are brought together.

3,939,880

METHOD OF VACUUM PRESSURE FILL OF VISCOUS DAMPERS

Donald G. Zook, Metamora; Kenneth J. Miller, and Eugene K. Patton, both of Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 10, 1974, Ser. No. 477,914

Int. Cl.² B65B 3/04

U.S. Cl. 141—1 R 2 Claims

1. A torsional vibration damper filling method, the damper comprising a housing having an inertia weight mounted therein to define a space therebetween adapted to be at least partially filled with a viscous damping fluid and an aperture formed through said housing, comprising the steps of:

fitting a valve in sealing relationship within said aperture;

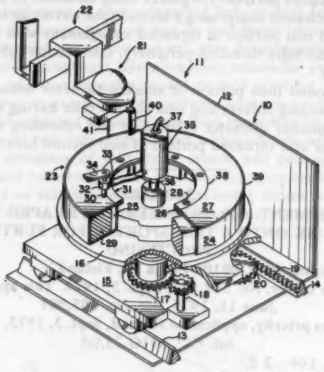
placing the viscous damper in a chamber;

simultaneously evacuating said chamber and evacuating said space through said valve;

maintaining said space in an evacuated state by closing said valve;

connecting said valve to a source of viscous damping fluid under pressure;

communicating said pressurized viscous damping fluid to said evacuated space through said valve;



removing said valve from the aperture; and

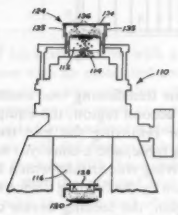
securing a plug in sealing relationship in said aperture.

3,939,881

APPARATUS FOR CONTROLLING DUST EMISSIONS

William H. Scott, 14326 SE. 162 Place, Renton, Wash. 98055

Filed May 28, 1974, Ser. No. 474,039
Int. Cl.² B65B *1/28*
U.S. Cl. 141—91 3 Claims



1. In combination with material handling means, which during operation, produces dust which drifts into a region adjacent said material handling means, dust control apparatus for precipitating dust from the air in said region comprising

a first set of nozzles comprising a first nozzle spaced radially outwardly from said material handling means and a second nozzle spaced a distance radially outwardly from said first nozzle,

a second set of first and second radially spaced nozzles, spaced laterally from said first-mentioned set,

fluid supply means connected to said nozzles operable to supply a flow of fluid under pressure to said nozzles, and

injecting means for injecting a preselected quantity of surfactant into such flow of fluid to produce a mixture having preselected proportions of fluid and surfactant,

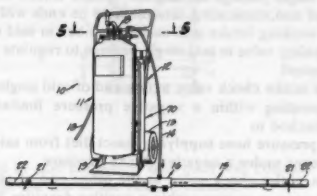
each of said nozzles being operable to atomize said mixture and dispense it in a curtain of finely dispersed spray, said nozzles being so disposed that the sprays from said first and second nozzles in each set are directed in substantially the same direction to produce a double curtain of spray in said region, and said second set is positioned sufficiently closely to said first set to produce intermixing of the spray dispensed from said first and second sets of nozzles in a region therebetween to provide a substantially continuous spray curtain.

3,939,882

CABLE RECLAMATION METHOD AND APPARATUS

George W. Gillemot, Santa Monica, Calif., assignor to John T. Thompson, Los Angeles, Calif., a part interest

Filed Feb. 25, 1974, Ser. No. 445,278
Int. Cl.² B65B *3/04*
U.S. Cl. 141—231 10 Claims



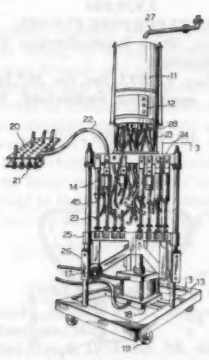
1. Cable reclamation apparatus for injecting a pre-mixed two-part liquid compound into and along a sheathed electrical cable, through a compound entry port in the sheath of the cable, to purge the cable of moisture, comprising a gas-pressurized tank having compound dispensing hose means terminating in a charging means sealably engageable with the exterior of the cable around the compound entry port with the hose means in communication with the compound entry port, means for supplying pressurized gas to said tank to pressurize and dispense liquid compound therefrom and into the cable along said dispensing hose means, and mixing means, comprising means for bubbling pressurized gas through the liquid compound, for mixing the two parts of the compound before starting to dispense the compound into the cable.

3,939,883

MACHINE TO FILL INSECT REARING CELLS WITH DIET

Edsel A. Harrell; Alton N. Sparks; William D. Perkins, and Woodrow W. Hare, all of Tifton, Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 1, 1974, Ser. No. 510,974
Int. Cl.² B65B *3/04*
U.S. Cl. 141—231 4 Claims



1. An apparatus for filling insect rearing cells with diet comprising in combination:

a. a means of storing insect diet, provided with a heater and insulated for temperature retention, said storing means attached to

b. a plurality of vertical metering means wherein each vertical metering means comprises in combination:
1. a vertical pneumatic cylinder having its upper end affixed to a upper horizontal stationary support for stability, and its lower stem end affixed to a lower horizontal movable support to impart function by upward and downward movement,
2. an adjusting collar on said lower stem end for calibrating dispensed quantities of insect diet,
3. a single passage serving for volume intake and outlet and communicating intermediate its ends with
4. a working intake and outlet chamber in said cylinder
5. a safety valve in said single passage to regulate pressure control
6. an intake check valve at one end of said single passage operating within a negative pressure limitation and attached to
7. a pressure hose supplying insect diet from said storing means under a negative intake pressure,
8. an outlet check valve at the other end of said single passage operating within a positive pressure limitation and attached to
9. a pressure hose dispensing insect diet under a positive outlet pressure,

c. a frame comprising:
1. a base mounted on casters,
2. vertical post supports,
3. said upper horizontal stationary support affixed to said vertical post supports at the ends thereof and also attached to the upper end of each vertical metering means,
4. said lower horizontal movable support affixed to the vertical post supports by a vertical sliding means and also attached to the lower end of each vertical metering means thereby imparting controlled function by upward and downward movement to each metering means and said lower horizontal movable support attached to and actuated into upward and downward movement by a pneumatic means, said lower horizontal support also affixed to a system of braces and rollers which travel on vertical tracks affixed to the vertical post supports thus imparting stability and maintaining the vertical metering means plumb,

d. a nozzle means communicating with said pressure dispensing hose for dispensing insect diet in controlled and preset quantity and into

e. a rearing cell structure comprising individual cells.

3,939,884

MULTI-PURPOSE FUNNEL

Karl Werner Mader, Obere Reppischstrasse 35, 8953 Dietikon, Zurich, Switzerland

Filed Aug. 9, 1973, Ser. No. 387,162

Claims priority, application Switzerland, Nov. 3, 1972, 016165/72

Int. Cl.² B65B *39/00*

U.S. Cl. 141—333 **7 Claims**

1. The combination of a multi-purpose funnel and attachment therefor, said funnel comprising a bowl with inwardly flanged open top and a bottom opening, a handle on said bowl, a ring being fixed to said bowl and having a threaded periphery, an outflow tube being fixed to said bowl around said bowl opening and within said ring, said tube having a partially threaded periphery and portion of smaller diameter than said tube threaded periphery, a gasket being mounted on said tube, said attachment comprising a second tube having an internally threaded end portion in threaded engagement with said first mentioned tube threaded periphery, said second tube having said first

mentioned tube portion of smaller diameter telescopically extending therein and said second tube having a portion of smaller diameter relative to and extending angularly from said threaded portion of said second tube.

3,939,885

EQUIPMENT FOR TRANSFERRING HEAPED TREE TRUNK ONTO A TRANSPORTER FOR FURTHER PROCESSING

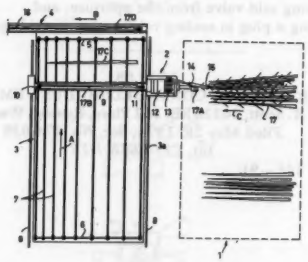
Antti Tapani Valo, 08100 Lohja 10, Finland

Division of Ser. No. 502,587, Sept. 3, 1974. This application June 11, 1975, Ser. No. 585,901

Claims priority, application Finland, Sept. 3, 1973, 2740/73

Int. Cl.² A01G *23/08*

U.S. Cl. 144—2 Z **4 Claims**



1. Equipment for transferring tree trunks one-by-one from a first region to a second region, the equipment comprising a feeding device for removing the tree trunks from the first region, a receiving table, and a conveyor means on the receiving table for receiving tree trunks which have been removed from the first region by the feeding device and conveying them to the second region, the feeding device comprising:

a gripper for gripping a tree trunk disposed in said first region;

a roller conveyor having its feeding direction transverse to the feeding direction of said conveyor means and positioned to receive the tree trunk from the gripper and advance it longitudinally;

a second conveyor having its feeding direction aligned with the feeding direction of said roller conveyor and arranged to receive the tree trunk from the roller conveyor and advance it longitudinally to discharge it onto said conveyor means; and

a lopping machine arranged between the gripper and the second conveyor to lop the tree trunk as it passes from said first region to the second conveyor.

3,939,886

TREE HARVESTER AND PROCESSOR

Frank J. Tucek, Wausau, Wis., assignor to J. I. Case Company, Racine, Wis.

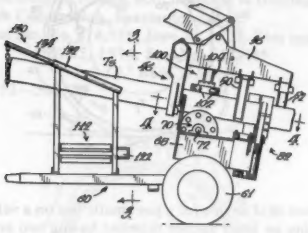
Filed Oct. 24, 1974, Ser. No. 517,461

Int. Cl.² A01G *23/08*; F01B *15/04*

U.S. Cl. 144—3 D **12 Claims**

1. A tree harvesting apparatus including an articulated power actuated boom pivoted thereon by a first fluid ram, and elongated mast pivoted on the outer end of said boom by a second fluid ram, tree gripping means and tree severing means

on said mast, said articulated boom and fluid rams adapted to be manipulated to position said mast adjacent the base of a tree, so that said tree may be gripped by said gripping means and severed adjacent the base by said severing means, a frame adjacent said mast, a tree advancing roll on said frame for engaging and supporting said tree on said frame, drive means for rotating said tree advancing roll, tree delimbing means on said frame adjacent said tree advancing means for encircling said tree, and tree engaging means on said mast for pressing said tree into engagement with said tree advancing roll so that said power actuated boom or said fluid rams may be utilized to press said tree into engagement with said tree advancing roll and actuation of said drive means will pull said tree through said delimbing means, said tree engaging means being positioned on said mast so that said severing means is aligned with said tree to sever said tree into sections.



10. A method of harvesting trees with a vehicle having a boom pivoted thereon with an elongated tree harvesting mast pivoted on the boom and a tree gripping assembly and a cutting assembly supported on the mast, comprising the steps of positioning the elongated mast adjacent the base of a standing tree, gripping the tree with the tree gripping assembly, severing the tree adjacent the base with the cutting assembly, repositioning the mast so that the severed tree is in a generally horizontal position with the base end above a drive mechanism, releasing the gripping assembly to deposit the base end of the tree onto the drive mechanism, encircling the tree with a delimbing mechanism, forcing the base of the tree into engagement with said drive mechanism by engaging an opposed portion with tree engaging means on said mast, intermittently operating said drive mechanism to pull said tree through the delimbing mechanism, and intermittently operating said cutting assembly on said tree harvesting mast to sever the tree into sections.

3,939,887

HERMETICALLY SEALABLE COLLAPSIBLE CONTAINER

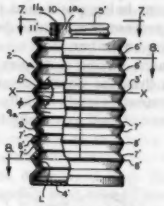
Thomas J. Scarnato, 381 Valley Road, Barrington, Ill. 60010

Continuation-in-part of Ser. No. 162,551, July 14, 1971, abandoned, and a continuation-in-part of Ser. No. 324,756, Jan. 18, 1973, abandoned. This application Sept. 19, 1974, Ser. No. 507,587

Int. Cl.² B65D *1/02*

U.S. Cl. 150—.5 **17 Claims**

1. A reusable plastic container comprising: a self-expanding pleated cylindrical body having an access opening at the top and a base at the bottom thereof; said body comprising a plurality of folds disposed between said top and base and having upper and lower converging portions; and each fold characterized by increased rigidity from the upper to the lower portions thereof whereby upon pressure being applied



to the top of said container, said body will collapse progressively from the top to the bottom thereof.

3,939,888

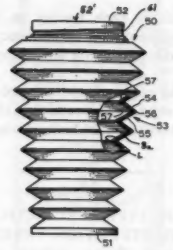
HERMETICALLY SEALABLE COLLAPSIBLE CONTAINER

Thomas J. Scarnato, 381 Valley Road, Barrington, Ill. 60010

Continuation-in-part of Ser. No. 162,551, July 14, 1971, abandoned, and a continuation-in-part of Ser. No. 324,756, Jan. 18, 1973, abandoned. This application Sept. 19, 1974, Ser. No. 507,586

Int. Cl.² B65D *37/00*

U.S. Cl. 150—.5 **20 Claims**



1. A hermetically sealable container comprising; a self-expanding body having an access opening at the top and a base at the bottom thereof; said body comprising at least one fold disposed between said top and base and having upper and lower fold portions of substantially uniform thickness joined in an outwardly directed apex; and said upper fold portion being of different radial length than said lower fold portion and said fold being characterized by increased rigidity from the upper to the lower portions thereof whereby upon pressure being applied to the top of said container, said body will collapse progressively from the top to the bottom thereof.

3,939,889

THREADED ASSEMBLY

Bogdan Bereznicki, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 8, 1974, Ser. No. 467,984

Int. Cl.² F16B *39/04*

U.S. Cl. 151—8 **1 Claim**

1. A threaded device comprising a member having an externally threaded portion,

a longitudinally extending groove formed in said portion,

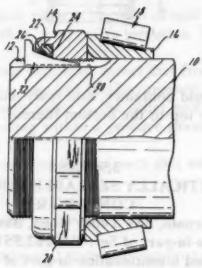
a nut having an internal thread positioned on said member,

said nut having an inwardly opening annular channel and an annular organic plastic insert positioned in said channel engaging said externally threaded portion,

an elongated locking element operatively interposed between said member and said nut,

said locking element being positioned in said groove and constructed to prevent the angular displacement of said nut relative to said member,

said locking element having a greater dimension in the radial direction than the depth of said groove whereby said locking element extends radially outwardly beyond the circumference of said externally threaded portion,



said plastic insert engaging said locking element and constructed to prevent the longitudinal displacement of said locking element relative to said nut,

said locking element having a generally channel shape defined by a base portion and a pair of parallel flange portions,

said flange portions each having an inclined surface in wedged engagement with said plastic insert,

said inclined surfaces causing the deformation of said plastic insert,

at least one of the edges of said inclined surfaces being bent outwardly to enhance the retaining effect of said wedged engagement between said locking element and said plastic insert.

3,939,890

WIDE BASE TYPE PNEUMATIC TIRE FOR CONSTRUCTION VEHICLE

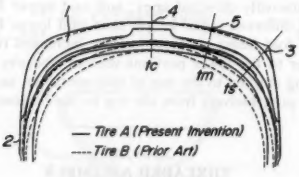
Masaru Abe, Sayama, Japan, assignor to Bridgestone Tire Company, Ltd., Kyoba, Japan

Filed Apr. 21, 1975, Ser. No. 570,148

Claims priority, application Japan, Apr. 23, 1974, 49-45029

Int. Cl.² B60C *11/04, 9/04*

U.S. Cl. 152—209 B **8 Claims**



1. A wide base type pneumatic tire for construction vehicle comprising a crown portion and a shoulder, said tire having such a sectional thickness distribution that a thickness at a middle point between crown center and shoulder is 0.95–1.08 times and a thickness at said shoulder is 1.00–1.30 times on the basis of the thickness of said crown center measured at meridional section of tire, said crown portion having at its surface a tread pattern forming a lug arrangement as a whole, the width of said lug measured along the circumferential direction of tire being 2.0–2.2 times at the crown center area and 1.25–1.35 times at the shoulder area with respect to a width of a groove between said lugs measured along the circumferential direction of tire, and the radius of said crown portion being not less than 75% of the overall tire width under normal inflation pressure.

3,939,891

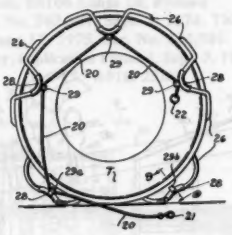
NON-SKID DEVICE FOR VEHICLE WHEELS

Forest H. Barnett, 2602 N. Baltimore, Tacoma, Wash. 98407, and Clarence E. Barnett, 5208 156th NE., Redmond, Wash. 98052

Filed Oct. 18, 1974, Ser. No. 516,038

Int. Cl.² B60C *27/20*

U.S. Cl. 152—225 R **9 Claims**



1. A non-skid device for a pneumatic tire on a vehicle wheel comprising an inner anchor member having two ends; readily detachable means connected with said two ends operable in securing said two ends together; an outer anchor member; said two anchor members being adapted to be positioned at the inner and outer sides of a tire respectively and each anchor member being capable of forming a closed loop of substantially smaller size than the tire; and a plurality of skid resisting members secured to and extending diagonally in zigzag fashion between said two anchor members back and forth across the tire, the inside anchor member being detachable from the skid resisting members at a location adjacent its two relatively attachable and detachable ends, whereby when said two detachable ends of said inside anchor member are detached from each other and the adjacent detachable connection with the skid resisting members is detached slackness and clearance are provided and the non-skid device is applicable to a tire on a wheel with the tire resting on the ground.

3,939,892

MAKING INSULATOR GASKETS

Robert G. Farnam, New Lisbon, and Michael T. Passarella, Wisconsin Rapids, both of Wis., assignors to F. D. Farnam Co., Lyons, Ill.

Division of Ser. No. 120,526, March 3, 1971, which is a continuation-in-part of Ser. No. 76,459, Sept. 29, 1970, Pat. No. 3,655,210, which is a continuation-in-part of Ser. No. 66,958, Aug. 26, 1970, abandoned. This application Aug. 20, 1973, Ser. No. 389,491

Int. Cl.² B32B *31/00;* **B65D** *53/00*

U.S. Cl. 156—252 **12 Claims**

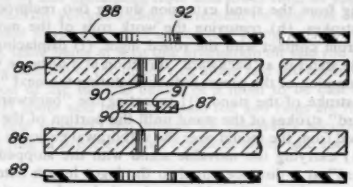
1. The method of forming heat insulating gasket structures for installation between an automotive engine and a carburetor mounted thereon comprising:

a. die-cutting a member from a sheet of heat insulating material to form a core;

b. providing said core with tab-like portions, some of which have a bolt hole therethrough; and

c. pressing the core only at the tab-like portions to densify and decrease the volume of the core at the tab-like portions, and

d. applying a gasket layer to at least one side of the core having a density less than that of the core, said gasket



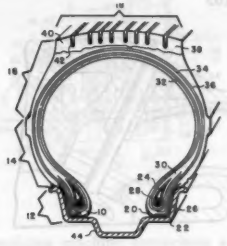
structure being thus densified, prior to installation of the gasket structure between said engine and carburetor.

3,939,893

TIRE CORD FABRIC

Calvin P. Schmidt, Clemson, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 374,556, June 28, 1973. This application Oct. 25, 1974, Ser. No. 517,989
Int. Cl.² B60C 15/06
U.S. Cl. 152—362 CS 1 Claim



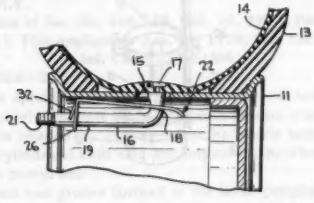
1. In a tubeless tire having a ply turn-up portion, a bead area, a sidewall area, a shoulder area and a tread area the improvement comprising: a chafer fabric connected to the outside of the ply turn-up area adapted to contact the inside of a tire rim, said chafer fabric being a woven fabric constructed of a round monofilament warp yarn and a bulked multifilament fill yarn.

3,939,894

VALVE STEM LOCK

H. James Curtis, Miami, Fla., assignor to Ryder Truck Rental, Inc., Miami, Fla.

Filed Oct. 23, 1974, Ser. No. 517,248
Int. Cl.² B60C 29/00
U.S. Cl. 152—427 9 Claims



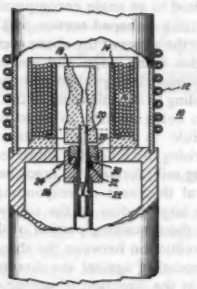
1. A valve stem lock for motor vehicle tire, comprising a flat plate member of springy material having an open slot at one end for embracing the valve stem, a transverse rigid flange on said plate member extending perpendicular thereto, said flange having an opening through which the valve stem extends, opposing pairs of locking projections on said flange extending into said opening, one pair of said locking projections defining a portion of said opening, a portion of said flange defining a spring finger member connected at its base, the other pair of said locking projections being located at the free end of said spring finger member, whereby during installation of said plate member wherein said opening surrounds the valve stem and said slot embraces the valve stem, said spring finger is shifted outwardly of said flange for spring locking said plate member to the valve stem as said locking projections engage the valve stem, and whereby said locking projections may be disengaged from the valve stem as said plate member is spring bent toward the valve stem thereby causing said flange to shift therealong.

3,939,895

METHOD FOR CASTING DIRECTIONALLY SOLIDIFIED ARTICLES

Thomas F. Sawyer, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,396
Int. Cl.² B22D 25/06
U.S. Cl. 164—60 7 Claims



1. A method of producing a directionally solidified cast alloy article in a shell mold, said method comprising

providing a mold having a cavity divided into an upper portion and a lower portion, said mold being disposed in a heating zone,

placing one end of a longitudinal heat extractor element of said alloy into the lower portion of the cavity, said other end of said heat extractor extending therefrom and being exposed to a continuous flow of fluid coolant,

heating said mold and said one end of said heat extractor placed therein at a temperature above the melting range of said alloy to melt a portion of said one end of the heat extractor,

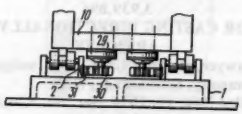
filling said mold with said alloy in a molten state, and

controllably lowering said mold out of the heating zone to allow said mold and contents thereof to cool and to establish directional solidification of the alloy in said cavity.

3,939,896
METHOD OF ROLLING A CONTINUOUSLY CAST INGOTS

Evgeny Alexeevich Korshunov, pereulok Otdelny, 5a, kv. 29; Evgeny Zakharovich Freidenzon, ulitsa Lunacharskogo, 161, kv. 23; Vladimir Arkadievich Tyagunov, ulitsa Mira, 36/7 kv. 3; Mikhail Ivanovich Fedorov, ulitsa Komsomolskaya, 72, kv. 27, all of Sverdlovsk; Alexandr Ivanovich Kalinin, ulitsa Mira, 12, kv. 49, Nizhny Tagil; Konstantin Alexeevich Malikov, ulitsa Komsomolskaya, 59a, kv. 7, Sverdlovsk; Mikhail Iosipovich Arshansky, prospekt Lenina, 23/40, kv. 8, Nizhny Tagil; Igor Nikolaevich Petrov, ulitsa Malysheva, 152b, kv. 30, and Evgeny Valentinovich Melnikov, ulitsa Narodnogo Fronta, 56, both of Sverdlovsk, all of U.S.S.R.

Filed Dec. 5, 1973, Ser. No. 422,071
Int. Cl.² B22D *29/00*
U.S. Cl. 164—76 **1 Claim**

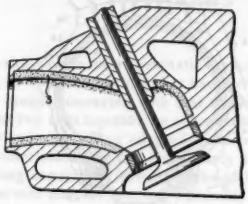


1. In a method of rolling continuous cast ingots which are periodically withdrawn from a mould, including the use of a stand with reversibly rotatable shaped rolls each having at least one working portion, with the reversible rotation of the rolls being limited to an angle encompassing said working roll portion comprising a shaped section and two cylindrical sections located at the edges of the above section having different radii, one radius being large and corresponding to a final thickness of an ingot being rolled and one radius being small and corresponding to the thickness of the ingot being cast, the shaped section being arcuate so as to provide a prescribed drafting schedule to the ingot portion being rolled, said method comprising the following steps: feeding an ingot being cast to a rolling mill; forming an ingot head by reducing said ingot to a final thickness corresponding to the cylindrical section of the large radius of the roll working portion and further rolling the remaining portion of the ingot by progressive repeated reduction between the shaped rolls of the stand through reciprocation against the direction of movement of the ingot and in the direction of movement of the ingot, the stand with the shaped rolls incorporated therein being set prior to each reciprocating stroke to such a position that during each next working stroke of the stand the ingot is rolled between the shaped sections of the rolls only with a preset reduction degree; said further rolling including the operations of (a) setting the rolls of the movable stand to one of their extreme positions, (b) displacing the stand in a "backward" direction with respect to the ingot direction to a position corresponding to the subsequent preset reduction of the ingot, (c) carrying the stand further "backward" together with the rotating rolls while reducing the ingot first between the cylindrical roll sections with large radii of the roll working portion, then between the shaped roll sections, and finally between the cylindrical sections with small radii, said cylindrical sections with small radii tempering the ingot and eliminating any slight bulging of the ingot being cast at the end of the stand "backward" stroke, (d) setting the rolls of the movable stand to another extreme position, (e) moving the stand with stopped rolls further "backward" at a distance which is the function of the required reduction during a successive "forward" stroke of the stand, (f) reversing the rolls of the movable stand until they grip the ingot and (g) carrying the stand "forward" together with the rotating rolls while successively tempering the ingot between the cylindrical sections with small radii on the roll working portions and reducing the ingot between the shaped roll sections and then between the cylindrical sections with large radii of the working roll portions, the ingot portion rolled between the cylindrical sections with large radii is that resulting from the stand extension during two reciprocating stand strokes, (h) removing the work rolls of the movable stand from contact with the rolled ingot, (i) displacing said movable stand in a "backward" direction at a distance which is the function of the preset reduction during the next "backward" stroke of the stand, (j) repeating the "backward" — "forward" strokes of the stand until the portion of the ingot extracted from the mould over the withdrawal period is rolled out, (k) carrying the movable stand with the stopped rolls "forward" at a distance equal to the ingot length extracted from the mould over the withdrawal period, and repeating the rolling cycles after each next extraction of the ingot being cast from the mould so as to enable the rolling of the remaining portion of the ingot being cast.

3,939,897
METHOD FOR PRODUCING HEAT-INSULATING CASTING

Yasuhisa Kaneko; Yasuhiko Komatsu; Yoshihiro Hibino, and Yasuo Okada, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed July 10, 1973, Ser. No. 378,012
Claims priority, application Japan, Nov. 1, 1972, 47-109749
Int. Cl.² B22D *19/08*
U.S. Cl. 164—103 **5 Claims**

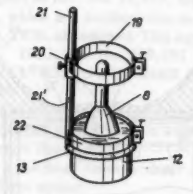


1. A method for manufacturing heat-insulating castings comprising the steps of: setting a flexible semifinished ceramic product, having a smooth surface, an elastic modulus of 200 to 5,000 kg/mm², a bending strength of 8 to 200 kg/cm², and a wall-thickness less than ¼ of its inside diameter, inside a casting mold and casting molten metal to enclose the ceramic semifinished product.

3,939,898
MOULD MANUFACTURING DEVICE

Claude Petro, 3 rue des Alpes, Geneva, Switzerland, and Andre Glise, Le Coin, Collonges-Sous-Saleve, France

Filed Nov. 26, 1973, Ser. No. 419,055
Int. Cl.² B22C *7/02, 13/00*
U.S. Cl. 164—150 **3 Claims**



1. A mold manufacturing device comprising a support, an ogival head extending vertically above said support to support in turn a set of rods carrying blanks of pieces to be molded in

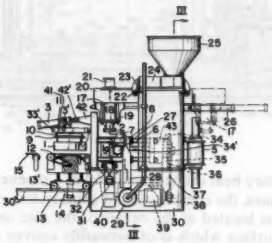
calcinable or fusible material, a lower ring detachably secured to said support in surrounding relationship, a vertical rod carried by and upstanding from said lower ring, an upper ring mounted for vertical sliding movement on said rod coaxially with said lower ring, said upper ring being horizontally disposed, there being at least one graduation on said rod indicating the position of the upper ring along said rod relative to the location of the thermal center of a mold to be cast on said support about said head after said rod and rings are removed from said support, and means for releasably securing said upper ring in predetermined positions along said rod.

3,939,899

SHELL MOLDING MACHINE IN WHICH BLOWN CORE CAN BE EJECTED OUTSIDE VISE ASSEMBLY

Kiyomitsu Kawai, Osaka, Japan, assignor to Naniwa Products Co., Ltd., Osaka, Japan

Filed June 13, 1974, Ser. No. 479,125
Claims priority, application Japan, July 3, 1973, 48-75514
Int. Cl.² B22C *17/08, 13/12*
U.S. Cl. 164—181 **7 Claims**



1. A shell molding machine comprising a fixed frame, a blow head assembly supported from said fixed frame, said blow head assembly including an outlet, a vise assembly supported rotatably by said fixed frame below the outlet of said blow head, a pair of cooperating mold halves, said mold halves being mounted in said vise assembly, one of said mold halves being pivoted with respect to said vise assembly, means for pivoting said one mold half from a first position adjacent to the other of said mold halves to a second position substantially exterior of said fixed frame for ejection of molded articles from said one mold half, and means for so ejecting said articles when said one mold half is in said second position.

3,939,900

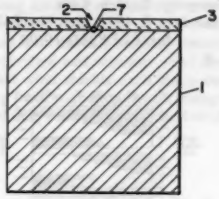
APPARATUS FOR CONTINUOUS CASTING METAL FILAMENT ON INTERIOR OF CHILL ROLL

Donald E. Polk, Morristown, and John R. Bedell, Sparta, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 416,720, Nov. 16, 1973, Pat. No. 3,881,542. This application Jan. 27, 1975, Ser. No. 544,165
Int. Cl.² B22D *11/06*
U.S. Cl. 164—27 **8 Claims**

1. In an apparatus for the production of continuous length shaped metal filaments from a molten stream wherein the filament is shaped by casting onto the inside surface of a rotating cylindrical chill roll, the improvement wherein said apparatus comprises:

a. at least one groove formed in the inner periphery of the roll, said groove being flanked by a smooth tapered surface of a thermal insulating material which has a substantially greater thermal insulating property than the chill roll and which is not wetted by the molten metal said tapered surface directing into the groove the molten metal impinged thereon; and



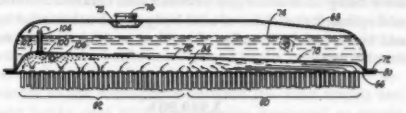
b. means for removing the solidified shaped filaments from the groove.

3,939,901

METHOD AND APPARATUS FOR COOLING AND DEAERATING INTERNAL COMBUSTION ENGINE COOLANT

Joseph T. Cieszko, Richmond Heights, and Charles L. Moon, Brecksville, both of Ohio, assignors to White Motor Corporation, Cleveland, Ohio

Filed Apr. 19, 1973, Ser. No. 352,414
Int. Cl.² F01P *5/10*
U.S. Cl. 165—1 **8 Claims**



1. A method of cooling an internal combustion engine comprising:

a. circulating a coolant comprising a mixture of ethylene glycol and water through coolant passages in the engine by an engine driven pump;

b. communicating coolant exiting from the engine to a radiator header chamber via a radiator inlet;

c. passing the coolant through a plurality of first radiator coolant passages extending from said header chamber at velocities which establish a minimum Reynolds number of about 5000 at the torque peak speed of the engine;

d. exhausting coolant from projecting ends of said first radiator coolant passages into a second header chamber;

e. progressively reducing the coolant velocity as the coolant flows in said second header chamber;

f. establishing a region of substantially quiescent coolant in said second header chamber;

g. providing a coolant reservoir;

h. communicating said coolant reservoir with said substantially quiescent region;

i. detraining gas from the coolant in said substantially quiescent region and directing the detrained gas to said coolant reservoir;

j. fractioning off coolant from said second header chamber via a plurality of second radiator coolant passages opening into said second header chamber;

k. passing coolant through said second radiator coolant passages at velocities for establishing a minimum Reynolds number of about 5000 at the torque peak speed of the engine; and,

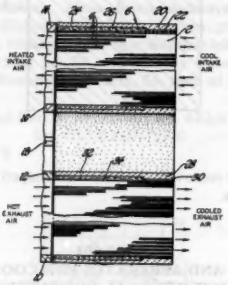
l. exhausting coolant from said second radiator coolant passages into a third header chamber.

3,939,902

HEAT EXCHANGER RIM AND HUB WITH L-SHAPED CROSS-SECTION

Lawrence E. Coubrough, Golden, Colo., assignor to Coors Porcelain Company, Golden, Colo.

Filed Feb. 5, 1975, Ser. No. 547,304
Int. Cl.² F28D 19/00
U.S. Cl. 165—8 7 Claims



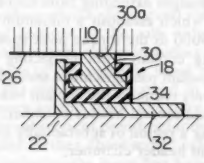
1. A heat exchanger for use in transferring heat from the exhaust gases of a turbine engine to the intake air for the engine, said heat exchanger comprising a rotatable cylindrical ceramic body having axially extending passages therethrough, an annulus of ceramic bordering a cylindrical surface of said body and having a radially extending annular flange bonded to said cylindrical surface of said body at one axial end thereof, there being an annular gap between said ceramic annulus and said cylindrical surface of said body at the other axial end of said body, and an annulus of resilient sealing material in said annular gap.

3,939,903

SEAL ASSEMBLY FOR A ROTARY REGENERATIVE HEAT EXCHANGER

Yoshihiro Sakaki, Yokohama, and Kensuke Eishima, Urawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 2, 1973, Ser. No. 412,104
Claims priority, application Japan, Nov. 20, 1972, 47-132633
Int. Cl.² F28D 19/00
U.S. Cl. 165—9 2 Claims



1. In a rotary regenerative heat exchanger having disc-type rotary heat accumulator mounted for rotation within a casing having an interior wall adjacent to and spaced from one end of the disc-type rotary heat accumulator, a seal assembly comprising:

a L-shaped retainer mounted securely to the interior wall of said casing;

an elastomeric resilient member fixed to said L-shaped retainer; and

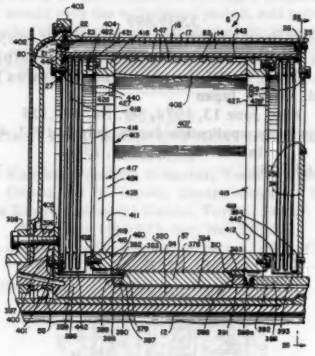
a seal element having a carbon sealing face adjacent to the one end of said disc-type rotary heat accumulator and a base with a T-shape embedded in said elastomeric resilient member, said elastomeric resilient member being so constructed and arranged as to maintain said sealing face in sealing engagement with the end of said disc-type rotary heat accumulator.

3,939,904

ROTARY DISC REGENERATOR

Albert H. Beaufrere, Private Road, Huntington, N.Y. 11743

Division of Ser. No. 300,774, Oct. 25, 1972, Pat. No. 3,818,696. This application Mar. 18, 1974, Ser. No. 452,352
Int. Cl.² F28D 19/00
U.S. Cl. 165—9 13 Claims



3. In a rotary heat exchanger useful as a regenerator for gas turbine engines, the combination of a rotary disc comprising:

hub means located at the center of the disc and having an outer surface which is of outwardly convex radial cross-sectional shape, an annular member forming the outer periphery of the disc and having an inner surface of inwardly convex radial cross-sectional shape, and

an integrated axial through flow heat exchange matrix which, when cool and undistorted, has generally right cylindrical inner and outer peripheral surfaces and two circular major faces which are flat and lie in planes transverse to the axis of rotation of the disc,

said matrix defining heat exchange passages extending from one of said major faces to the other and through which gas can flow in heat exchange relation to the matrix,

said matrix, when cool and undistorted, having an effective thickness, in a plane intermediate said major faces, such as to completely fill the annular space between said hub means and said annular member in said intermediate plane, the intermediate portions of said inner and outer surfaces of said matrix being affixed to the intermediate portions of said outer surface of said hub means and said inner surface of said annular member, respectively,

said matrix, when heated, expanding radially in the portions thereof adjacent said major faces, with space for such expansion being afforded by the fact that the radial distance between said onvex surfaces increases from said intermediate portions toward said major faces, such expansion being accompanied by a corresponding bowing of said major faces; and

a stationary seal device mounted adjacent one of said major faces of said matrix, said seal device being constructed and arranged to enclose a gas flow space through which gas under pressure can be supplied to the matrix in a direction parallel to the axis of rotation of said disc, said seal device comprising:

bimetal means extending at least generally along a diameter of the matrix in close proximity to but out of contact with said one major face,

said bimetal means being operative to warp the seal device in conformity to said one major face of said matrix as that face warps under the influence of temperature changes, whereby close proximity of the seal device to said one major face of the matrix is preserved and rubbing of the matrix against the seal device is avoided.

3,939,905

SYSTEM FOR REGULATING THE TEMPERATURE IN ROOMS, MORE PARTICULARLY FOR COOLING ROOMS

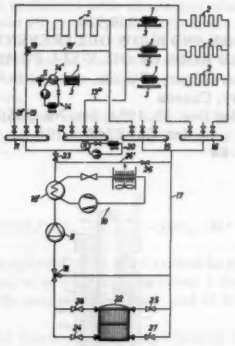
Hermann Gettmann, Sythen, Germany, assignor to Tour Agenturer AB, Johanneshov, Sweden

Filed May 18, 1973, Ser. No. 361,554

Claims priority, application Germany, May 18, 1972, 2224242

Int. Cl.² F24H *9/08*

U.S. Cl. 165—49 **12 Claims**



1. A water circulation type cooling system for regulating the temperature of air in rooms comprising:

a. a pipeline means included in a structural member such as a floor, ceiling or wall, the pipeline means being supplied with a charge of water; and

b. dehumidifier means in the room for reducing the temperature of the air to condense and remove moisture therefrom, the dehumidifier means comprising a convector coupled to the pipeline means, such that the charge water flows through the convector in series or in parallel with the charge water through the pipeline means, a blower and a collector tray for collecting the condensate from the convector, wherein the dehumidifier and pipeline means are positioned with respect to each other in the room, such that air first passes through the dehumidifier means and then is cooled by the pipeline means, whereby condensation on the structural members is reduced due to the removal of moisture by the dehumidifier means.

3,939,906

AIR COOLED EXCHANGER

Robert K. Rothenbucher, Bloomingdale, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Dec. 28, 1973, Ser. No. 429,649

Int. Cl.² F28F *7/00*

U.S. Cl. 165—76 **1 Claim**

1. An air cooled heat exchanger, comprising:

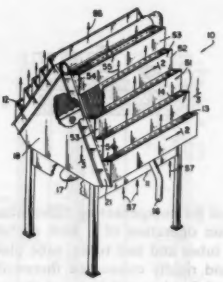
a pair of tube banks positioned in oppositely inclined vertical planes to define an A-shape, each of said tube banks having exposed tubes supported in a tube plane;

a pair of side walls connected to the tube banks to define a chamber having an open bottom between the side walls and the lower portion of the tube banks;

means for passing fluid through the tubes;

means for drawing air from the atmosphere into the open bottom of the chamber to pass air upwardly through the tube banks and into the surrounding atmosphere; and

a plurality of individual and separate wind shields for each tube bank, said wind shields each being comprised of a wind defecting front wall and integral triangularly shaped side walls, said side walls being attached to the tube frame



of each of the tube banks whereby each of the wind shields are separately supported by the tube frame, said front walls being disposed in a substantially vertical plane, each of said front walls extending across the width of the tube banks and being spaced over the length thereof to prevent wind from passing through each of the tube banks when the tube banks are exposed to the atmosphere and permitting air to flow through the tube banks and upwardly to the atmosphere between the wind shields and tube banks, said wind shields being supported as evenly supported loads on the tube frame.

3,939,907

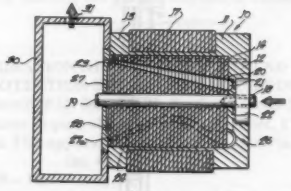
ROTARY COMPRESSOR AND CONDENSER FOR REFRIGERATING SYSTEMS

John A. Skvarenina, 2639 W. Augusta, Chicago, Ill. 60622

Filed May 21, 1974, Ser. No. 472,066

Int. Cl.² F28D *11/00*; F28F *5/00*

U.S. Cl. 165—86 **5 Claims**



1. A heat exchanger comprising in combination: a helically wound tubing, an inlet formed at one end of said tubing, an outlet formed at the other end of said tubing, a plurality of heat radiating fins secured to the tubing and arranged along a longitudinal axis of rotation of the helically wound tubing, drive means coupled to said helically wound tubing for rotating said tubing about said longitudinal axis of rotation, whereby heated fluid passing through said helically wound tubing will be cooled during rotation thereof.

3,939,908

METHOD FOR EQUALIZING DIFFERENTIAL HEAT EXPANSIONS PRODUCED UPON OPERATION OF A HEAT EXCHANGER AND HEAT EXCHANGER EMBODYING SAID METHOD

André Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, Hauts de Seine, France

Filed Apr. 1, 1974, Ser. No. 456,886
Claims priority, application France, Apr. 4, 1973, 73.12174
Int. Cl.² F28D 1/00
U.S. Cl. 165—149 27 Claims

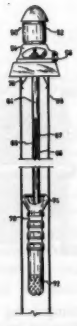
1. A method for compensating differential heat expansions produced upon operation of a heat exchanger of the type having inner tubes and end tubes, tube plates fitting ends of said tubes, and rigidly connected therewith, lateral flanges, and corrugated fins inserted between the tubes and between said tubes and the lateral flanges to form a unit, comprising the steps of welding or brazing as a one-piece unit with said lateral flanges and tube-plates rigidly connected together, and providing means for precluding bonding between said lateral flanges and said fins in the proximate area of said tube-plates wherein the connection of said end tubes to said lateral flanges through said fins in the proximate area of said tube plates is non-bonded.

3,939,909

SYSTEM OF SUPPRESSING THE DISCHARGE CASING STRING IN DEEP-WELL VERTICAL PUMPS

Carlos Mayer Ortiz, Blas Pascal 135-1002, Mexico City 10, Mexico

Filed Feb. 4, 1974, Ser. No. 439,041
Claims priority, application Mexico, Feb. 16, 1973, 141636
Int. Cl.² F04B 47/02
U.S. Cl. 166—68.5 3 Claims



1. A pumping system for a deep-well having a wall including upper and lower ends, said system comprising:

driving means disposed adjacent the bottom of the well and having a lower suction inlet and an upper outlet for driving the fluid to be pumped from the bottom of the well to the surface;

actuating means for said driving means connected to a suitable power source and being suitably drivingly connected to said driving means;

a first sealing means located at the upper end of said wall to hermetrically seal said upper end of the wall and to form a discharge outlet of said well;

a second sealing means adjacent the bottom of the well for sealing said driving means to the wall of the well between the lower suction inlet and the upper outlet of the driving means;

said first and second sealing means providing a sealed wall section between the first and second sealing means forming the only conduit in the well from the upper outlet of the driving means to the discharge outlet of the well for the fluid being pumped; and

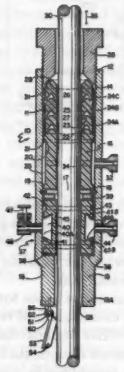
said second sealing means including a hollow frusto-conical seal portion with the greater diameter end of the seal portion extending upward and formed inwardly to form a smooth curved surface tangentially engaging the wall of the well, the lower smaller diameter end of the seal portion being secured to the driving means.

3,939,910

STUFFING BOX AND BLOW OUT PREVENTING DEVICE FOR POLISH RODS OF OIL WELL PUMPING UNITS

Albert I. Bruce, Calgary, Canada, assignor to GAR Industries Ltd., Calgary, Canada

Filed Dec. 23, 1974, Ser. No. 535,222
Int. Cl.² E21B 33/03
U.S. Cl. 166—84 14 Claims



1. A stuffing box for polish rods of oil well pumping units comprising in combination a cylindrically bored body portion, a cylindrically bored substantially cylindrical upper guide component formed of resilient elastomeric material situated in said body portion and surrounding the polish rod when said polish rod is positioned within said stuffing box for reciprocation therein, means to support said upper guide component within said body portion, and a plurality of substantially ring-line packing elements of resilient elastomeric material stacked one upon the other and upon the upper end of said guide component and a packing gland nut screw threadably engageable within said body portion and bearing upon the uppermost of said packing elements to compress same in sealing relationship with said guide component and said polish rod and a cylindrical sleeve surrounding said packing elements to enclose and restrain same against outward spreading movement, the diameter of said sleeve being slightly less than the inner diameter of said body portion whereby said packing elements and said sleeve are free floating within said body portion.

3,939,911

SURFACTANT OIL RECOVERY PROCESS USABLE IN HIGH TEMPERATURE FORMATIONS CONTAINING WATER HAVING HIGH CONCENTRATIONS OF POLYVALENT IONS

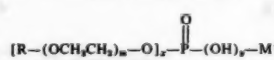
Jim Maddox, Jr., and Jack F. Tate, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 14, 1975, Ser. No. 558,404
Int. Cl.² E21B *43/22*
U.S. Cl. 166—274 **21 Claims**

1. In a method for recovering petroleum from a subterranean, petroleum-containing formation penetrated by at least one injection well and at least one production well, said formation containing water having polyvalent ions dissolved therein in a concentration of from about 200 to about 14,000 parts per million and at a pH from 5 to about 9, said recovery method being of the type wherein an aqueous fluid is injected into the formation via the injection well, and oil displaced by the injected fluid is recovered from the formation via the production well, wherein the improvement comprises injecting into the formation an aqueous three component surfactant solution comprising:

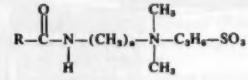
a. an anionic surfactant with an average molecular weight not to exceed about 360 selected from the group consisting of water-soluble salts of alkyl sulfonates having from 5 to 25 carbon atoms, and water soluble salts of alkylaryl sulfonates wherein the alkyl chains have from 5 to 25 carbon atoms;

b. a phosphate ester surfactant with an average molecular weight not to exceed about 1000 having the following formula



wherein R is alkylphenyl or an alkyl radical having from 12 to 24 carbon atoms, m is an integer between 1 and 20, *x* and *y* are 1 or 2 and the sum of *x* and *y* is 3, and M is a monovalent cation; and

c. a sulfonated betaine having the following structure:



wherein R is an alkyl group having from 12 to 24 carbon atoms and *n* is an integer from 1 to 5.

3,939,912

METHOD FOR REDUCING THE PRODUCTION OF WATER FROM OIL WELLS

Derry D. Sparlin, and Harry A. Wahl, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 21, 1975, Ser. No. 560,845
Int. Cl.² E21B *33/138*, *43/00*
U.S. Cl. 166—295 **8 Claims**

1. A method for reducing the production of water from subterranean formations penetrated by a wellbore, said method consisting essentially of:

a. mixing an oil having a viscosity from about 50 to about 10,000 cp at the pressure and temperature of said subterranean formations with a coupling agent selected from the group consisting of phenolic and furan resins and combinations thereof to produce a mixture containing from about 0.01 to about 10 weight percent coupling agent, said resins being liquid at the pressure and temperature of said subterranean formations; and,

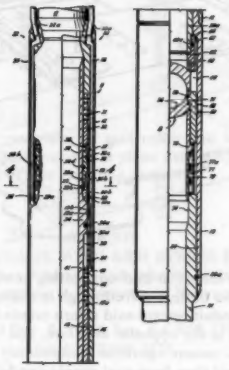
b. injecting said mixture into said formation in an amount sufficient to saturate said subterranean formations radially from said wellbore for a distance up to about 100 feet.

3,939,913

METHOD OF USING A SUBSURFACE SAFETY VALVE

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Continuation of Ser. No. 362,784, May 22, 1973, abandoned, which is a division of Ser. No. 131,710, April 6, 1971, Pat. No. 3,750,751. This application Nov. 4, 1974, Ser. No. 520,847
Int. Cl.² E21B *43/12*, *43/01*
U.S. Cl. 166—314 **20 Claims**



1. A method of regulating flow through a well tubing with a subsurface safety valve having a controllable stopper operating independently of the pressure in the tubing comprising the step of:

forming a pressure differential independent of well tubing pressure between first and second expansible control chambers formed by the valve when a greater pressure is selectively introduced in one of either first and second expansible chambers to control the movement of the stopper; and

adjusting the position of the stopper in response to the pressure differential between the first and second chambers to enable flow through the well tubing when the greater pressure is selectively introduced into one of either of the first and second expansible chambers.

3,939,914

COMBINATION AIR CONDITIONING AND FIRE PROTECTION SYSTEM FOR A BUILDING

John L. Carroll, P.O. Box 42413, Portland, Oreg. 97242

Continuation-in-part of Ser. No. 307,382, Nov. 17, 1972, abandoned. This application Apr. 26, 1974, Ser. No. 464,340
Int. Cl.² A62C *35/00*
U.S. Cl. 169—16 **6 Claims**

1. A combination air conditioning and fire protection system for a building comprising:

a heat exchanger through which fluid may be passed under pressure, said heat exchanger having a fluid inlet and a fluid outlet;

fluid temperature conditioning means spaced from said heat exchanger for bringing fluid to a preselected temperature,

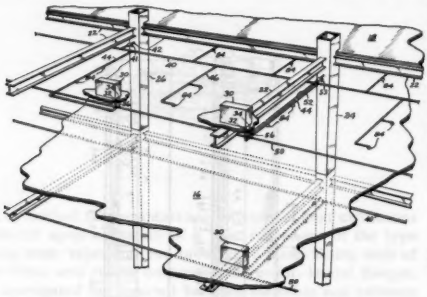
fluid supply conduit means operatively connected to said conditioning means for carrying fluid under pressure from said conditioning means toward said heat exchanger,

fluid return conduit means operatively connected to said conditioning means through which fluid under pressure may be conveyed from the heat exchanger to the conditioning means,

discharge means mounted on said fluid supply and return conduit means operable to discharge fluid therefrom within said building in case of fire,

first connecting conduit means operatively connecting the supply conduit means to the inlet of the heat exchanger,

second connecting conduit means operatively connecting the return conduit means to the outlet of the heat exchanger,



check valve means in said connecting conduit means permitting flow of fluid therethrough in a direction from said supply conduit toward said return conduit and inhibiting fluid flow in the opposite direction, and

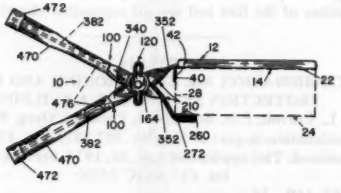
flow control means operable continuously to control the rate of fluid flow from said supply conduit to said return conduit as it passes through said heat exchanger for maintaining sufficient pressure in said supply conduit means to produce proper fluid discharge from said discharge means on said supply conduit means in the event of loss of pressure in said return conduit means or connecting conduit means downstream from said flow control means.

3,939,915

SAW GUIDE

James W. Wood, 8612 Templeton Drive, Omaha, Nebr. 68134

Filed Aug. 26, 1974, Ser. No. 500,384
Int. Cl.² B25B 5/16
U.S. Cl. 269—2 **10 Claims**



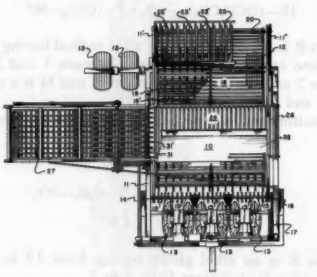
1. A saw guide assembly for flat-sided workpieces comprising a guide means having a rigid straight saw guiding surface, a pair of elongated lever assemblies, means pivotally connecting central portions of said lever assemblies together for rotation about an axis transverse to said straight saw guiding surface, certain portions of said lever assemblies being disposed generally on a same side of said axis when said levers are in approximate parallelism and defining rearward portions thereof respectively and serving as handles, the opposite ends of said lever assemblies each extending generally forwardly, the forward end of one of said lever assemblies being attached to said guide means, a pressing means mounted on the forward end of the other of said lever assemblies, said pressing means having pressing surface means disposed opposite said guide means, said rearward portions of said lever assemblies being grippable in the hand of an operator to force them toward each other so as to simultaneously force said pressing means toward said guide means so as to be able to grip a workpiece disposed therebetween, clamping means operably correlated with said lever assemblies for clamping said lever assemblies laterally together into fixed positions with respect to each other, a workpiece engaging positioning flange means extending from said guide means, said flange means having a forwardly facing workpiece engaging surface having forwardmost portions disposed substantially on a flange means plane arranged parallel to said axis and at a right angle to said saw guiding surface, outermost portions of said flange means forwardmost portions being spaced apart a substantial distance in a direction normal to said saw guiding surface for positioning said assembly with stability against twisting as pressure is applied onto said workpiece, said assembly being free of any impediment means disposed in a plane so closely adjacent to said saw guiding surface as to be located where a saw blade of any width would be interfered with by said impediment means.

3,939,916

APPARATUS FOR CLEANING TUBEROUS PLANTS

Delwin G. Woerman, 521 W. Ash St.; David G. Johnson, P.O. Box 221, and Donald F. Murphy, 609 W. Hazel, all of Caldwell, Idaho 83605

Filed May 19, 1972, Ser. No. 254,974
Int. Cl.² A01D 21/00
U.S. Cl. 171—18 **4 Claims**



1. An apparatus for cleaning tuberous plants, comprising a frame;

a plurality of digging wheels substantially upstandingly mounted to the lowermost side of a suitable, horizontally disposed, framing member at the forwardmost terminal end of said frame;

a disk-renk including a plurality of pentagonally shaped plates fastened on a suitable shaft journally mounted horizontally and transversely on said frame, rearwardly of said digging wheels, said shaft being driven by a suitable drive means;

a belt-renk subassembly including an elevating conveyor and a belt-renk, said elevating being mounted on suitable framing members of said frame and being operable to elevate and to move rectilinearly rearwardly plant tubers from said disk-renk, said elevating conveyor being driven by suitable drive means similar to said disk-renk, said belt-renk being disposed on a suitable framing member of said frame parallel to and substantially beneath said elevating conveyor, said belt-renk including an upwardly inclined, substantially chain conveyor-like belt being driven by suitable drive means driving said belt-renk in an upwardly inclined rearward direction, the angle of said belt-renk being disposed to suitably reduce downward

gravitational travel of a tuber on said belt-renk to overcome the counteracting rearward direction of travel of said belt-renk; and

a discharging subassembly being suitable mechanically powered and being carried on said frame, said discharging subassembly having means to collect said tubers discharged from said belt-renk and means to convey said tubers to a transporting vehicle.

3,939,917

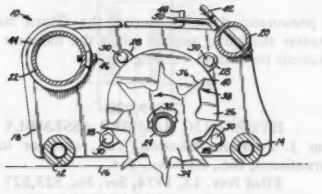
SPIKER BLADE

E. Smith Reed, Jr., Deephaven, and David J. Scherbring, Richfield, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed May 28, 1974, Ser. No. 473,745

Int. Cl.² A01B *21/02*

U.S. Cl. 172—555 **9 Claims**



1. A spiker blade for mounting on a rotatable shaft of a turf spiker assembly to break a ground surface and facilitate penetration of air, water and nutrients through the ground surface comprising:

a. blade means having a center of rotation and a plurality of teeth spaced about the periphery thereof, each tooth having a profile defined by a leading and a trailing edge which meet to form a tooth tip, said trailing edge having two segments thereon;

b. a piercing segment leading upward from the tooth tip which, together with said entrance edge, forms a tapered profile proximate said tip; and

c. a counterdepression segment above said piercing segment and directed outward from a line between the center of rotation and the tooth tip at a faster rate than said piercing segment so that the portion of the tooth profile bounded in part by said counterdepression segment increases in thickness at a rate faster than the portion bounded in part by said piercing segment.

3,939,918

TINE MOUNTINGS

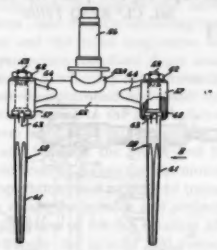
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland, and Ary van der Lely, 10 Weverskade, Maasland, Netherlands

Division of Ser. No. 218,667, Jan. 18, 1972, Pat. No. 3,809,166. This application Jan. 28, 1974, Ser. No. 436,892. The portion of the term of this patent subsequent to May 7, 1991, has been disclaimed.

Int. Cl.² A01B *15/00*

U.S. Cl. 172—763 **6 Claims**

1. A tine for a rotary harrow, comprising an upper fastening portion and a lower soil-working portion, said fastening portion and said soil-working portion each having a longitudinal axis, the longitudinal axes of the portions being angled with respect to one another, said fastening portion comprising an upper threaded end portion adapted to receive a fastening nut, a collar having an encircling upper conical surface, an integral junction between said fastening and said soil-working portions, said collar being positioned immediately above said junction, said conical surface facing said threaded end portion, integral projection means on said tine, said projection means being located adjacent said collar and extending later-



ally beyond the periphery of said collar and in a direction substantially perpendicular to a plane extending through the longitudinal axis of said fastening portion.

3,939,919

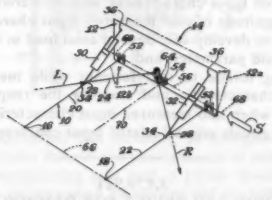
BULLDOZER FRAME WITH ARM STRESS EQUALIZER

Bernard L. Winker, Chicago, and John W. Gaines, Wheaton, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Dec. 5, 1974, Ser. No. 529,782

Int. Cl.² E02F *3/76*

U.S. Cl. 172—803 **10 Claims**



9. In a dozer blade frame in which pusharms are provided, having mounting means of connection for mounting the blade thereon, having diagonal struts extending from the pusharm inner sides toward the blade, and having means to effect pitching of the blade on the blade mounting means about a horizontal pitch axis defined by the pusharm front ends, the improvement in stress equalization means for the pusharms, comprising:

a link supporting, single swing connection on approximately the center rear of the blade essentially in coaxial alignment with said generally horizontal pitch axis; and

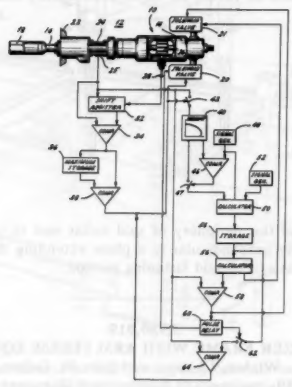
a generally upstanding one piece, common connecting link proper, arranged with closely adjacent portions of the connecting link proper pivotally connected to different ones of the diagonal struts at their inner end, and arranged with a downward prolongation to the upstanding link proper connected to the single swing connection for the common link.

3,939,920

TIGHTENING METHOD AND SYSTEM

Russell J. Hardiman, Sellersville, and Stanley K. Smith, Lansdale, both of Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Sept. 19, 1974, Ser. No. 507,429
Int. Cl.² B23Q 19/06
U.S. Cl. 173—1 27 Claims



11. A method of tightening a fastener to a desired axial load comprising;

applying torque and imparting rotation to said fastener and tightening said fastener to its yield point;

measuring one of the input characteristics experienced by said fastener at its yield point;

determining the magnitude of a parameter related to said measured input characteristic and thereafter calculating the magnitude of said measured input characteristic required to develop said desired axial load in said fastener using said parameter; and

reapplying torque to said fastener while measuring said input characteristic and stopping the reapplication of torque when said measured input characteristic approximately equals said calculated input characteristic.

3,939,921

METHOD AND DEVICE FOR DAMPING THE MOVEMENT OF A HAMMER PISTON

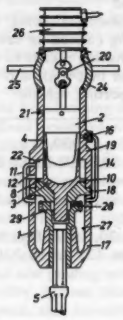
Kurt Östen Brännström, Saltsjo-Boo, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Dec. 16, 1974, Ser. No. 533,135
Claims priority, application Sweden, Dec. 31, 1973, 7317608
Int. Cl.² E21B 9/10
U.S. Cl. 173—121 8 Claims

1. A method for damping the movement of a hammer piston (3) incorporated in a hammer mechanism, the hammer mechanism including a driving piston (2) reciprocably movable in a machine housing (1), the method comprising:

driving said hammer piston (3) towards a tool (5) by said driving piston (2) via a pressure-gas cushion formed in a working chamber (4) of said housing (1) between said driving piston (2) and said hammer piston (3), and

pneumatically damping the movement of said hammer piston (3) during the main part of the return stroke of the hammer piston (3), and pneumatically damping the movement of the hammer piston (3) when it exceeds its normal working stroke and catching the hammer piston (3) essentially without recoil at its forward end position when the tool is situated outside the operating range of the hammer piston,



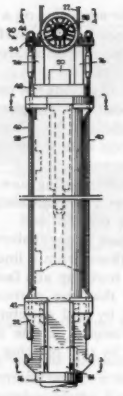
the pneumatic damping during the return stroke being greater than that applied when the hammer piston (3) exceeds its normal working stroke.

3,939,922

HYDRAULIC HAMMER ASSEMBLY

William J. Swenson, Houston, Tex., assignor to Raymond International, Inc., Houston, Tex.

Filed Nov. 13, 1974, Ser. No. 523,527
Int. Cl.² E02D 7/10
U.S. Cl. 173—125 31 Claims



1. A hydraulic hammer assembly comprising an outer casing, a central piston secured at one end to said casing, said piston having a large cross section region between regions of intermediate cross section and small cross section, a ram reciprocally moveable along said piston, said ram including a cylinder surrounding said piston and slideable therealong, said cylinder having a central internal region which closely accommodates said large cross section region of said piston and end regions which closely accommodate respectively, said regions of intermediate and small cross section of said piston said large cross section region of said piston thereby dividing said central internal region of said cylinder into two chambers of larger and smaller working area, respectively, an anvil mounted on said casing in the path of ram movement, hydraulic supply means including accumulator means for accommodating fluid flow while maintaining a substantially uniform high hydraulic pressure, said hydraulic supply means being in fluid communication with the chamber of small working area and hydraulic switching means being alternately connectable

to said hydraulic supply means and to a drain, said hydraulic switching means being in fluid communication with the chamber of larger working area.

3,939,923

POWER-DRIVEN IMPACT TOOL HAVING AN IMPACT-ESISTANT HAND GRIP ASSEMBLY

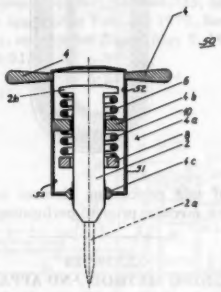
Friedrich-Wilhelm Aldag, Meerbusch; Robert Hans Scheipner, Dusseldorf, and Helmut Schluessler, Norf, all of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Jan. 17, 1975, Ser. No. 541,764

Claims priority, application Germany, Jan. 23, 1974, 2403074

Int. Cl.² B25D 17/24

U.S. Cl. 173—162 4 Claims



1. In a power-driven impact tool including an elongated tool drive housing having a flange at its upper end and adapted to receive at its lower end a drive member operative at a predetermined first frequency, and a hand grip assembly coupled to the tool drive housing via a first spring for axial movement with respect to the tool drive housing, the hand grip assembly having at its upper end a hand piece adapted to be grasped by a tool operator, the improvement which comprises, in combination, a second spring surrounding the tool drive housing and having one end carried by the hand grip assembly, and a weighted ring surrounding the tool drive housing and affixed to the other end of the second spring, the characteristic frequency of the subsystem defined by the second spring and the weighted ring being chosen to be equal to the first frequency, whereby the hand piece is substantially isolated from impacts and shaking movements set up by the drive member when the latter is operative.

3,939,924

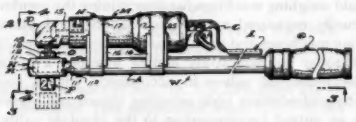
POWER TORQUE WRENCH

Bosko Grabovac, Mission Viejo, Calif., assignor to Consolidated Devices, Inc., South El Monte, Calif.

Filed Nov. 29, 1974, Ser. No. 528,409

Int. Cl.² B25B 21/00

U.S. Cl. 173—163 8 Claims



1. A torque wrench comprising an elongate lever arm with front and rear ends, a hand grip at the rear end of the arm, a ratchet head pivotally connected with and projecting forward from the front end of the arm and selectively pivotally shiftable laterally relative thereto, said head including a body, a spindle rotatably carried by the body on an axis parallel to the pivotal axis of the head and normal to the longitudinal axis of the arm, ratchet means between the body and spindle establishing driving engagement therebetween upon rotation of the arm and body in a predetermined direction about the axis of the spindle and a work engaging projection in axial alignment with and projecting from the spindle and laterally relative to the axis of the arm, said wrench including means in and related to the arm and the head responsive to the torsional forces at said projection resolved from manually applied forces on the hand grip, whereby said torsional forces applied by the wrench can be controlled and result in lateral pivotal shifting of the head relative to the arm, a drive motor fixedly carried by the arm remote from the spindle, a transmission connected with and between the motor and the spindle and manually operable control means for the motor to selectively set the motor in operation, said motor and transmission operable to selectively rotate the spindle and projection relative to the body in the direction of driving rotation afforded by said ratchet means whereby the spindle and projection are drivingly rotated without rotation of said arm, said transmission including means to afford pivotal lateral shifting of the head relative to the motor and the arm.

3,939,925

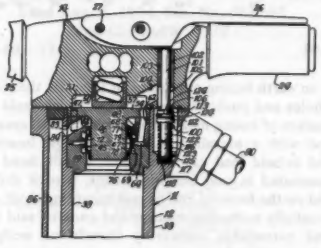
THROTTLE VALVE CONSTRUCTION FOR A PERCUSSION TOOL

Irvin R. Danielson, Burr Ridge, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

Filed Jan. 21, 1974, Ser. No. 435,328

Int. Cl.² B25D 9/14

U.S. Cl. 173—170 10 Claims



1. In a percussion tool including an elongated tool body having a cylinder therein and handle means at one end of said body for manipulating said tool, a piston mounted in said cylinder for reciprocating movement and operable to impart impact blows to a workpiece or the like mounted in one end of said body, said tool body also having passage means therein for conveying fluid under pressure to the opposite ends of said cylinder and control valve means for controlling the direction of the flow of fluid under pressure through said passage means so as to effect reciprocation of said piston in said cylinder, the improvement of throttle valve means including a throttle valve member adapted to be operatively connected to said passage means for controlling the quantity of fluid under pressure flowing therethrough, said throttle valve member having a first position preventing fluid flow through said passage means and into said cylinder to prevent operation of said tool, a second position permitting substantially unrestricted fluid flow through said passage means to permit normal operation of said tool, and a third position restricting the flow of fluid under pressure through said passage means so that the frequency of reciprocation and kinetic energy of said piston are substantially reduced, lever means mounted on said body adjacent to said handle means, said lever means being pivotal about an axis perpendicular to tool movement and operable to move said throttle valve member to said first, second and third positions, said lever means being positioned so as to hold said

throttle valve member in said second position when said lever means is fully depressed by the operator, and said lever means also being positioned so as to permit movement of said throttle valve member to and to hold the same in said third position when a pulling force is applied to said handle means by the operator, whereby the magnitude and frequency of the vibrations generated by said tool and transferred to the operator thereof, and the operating noise level of the tool, when said throttle valve member is in said third position, are substantially less than when said throttle valve member is in said second position, said throttle valve member having a constant flow area for a substantial length of movement thereof adjacent said third position.

3,939,926

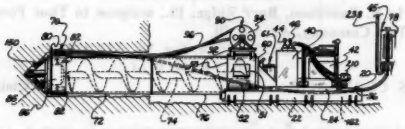
PORTABLE EARTH BORING MACHINE

Thomas W. Barnes, Franklin, and Albert R. Richmond, West Salem, both of Ohio, assignors to The Richmond Manufacturing Company, Ashland, Ohio

Continuation-in-part of Ser. No. 497,245, Aug. 14, 1974. This application Nov. 29, 1974, Ser. No. 528,460

Int. Cl.² E21B 7/10

U.S. Cl. 175—24 **8 Claims**



1. In an earth boring apparatus of the type that forms horizontal holes and pushes sections of casing into said holes, the combination of casing means comprising a lead casing section provided with a plurality of side openings; bearing means mounted in said lead casing section; a rock head mounting shaft journaled in said bearing means; a rock drilling head mounted on the forward end of said mounting shaft; a wedging means radially moveably mounted at each of said side openings and extendable outwardly therefrom; wedge driving means for said wedging means for extending and retracting said wedging means against and away from the rock surrounding said lead casing section; sensing means for progressive extension into the earth fill; gauge means for location adjacent the earth fill and connected to the sensing means, said gauge means including read-out indicia for informing the operator of grade deviations of the sensing means; and automatic control means for energizing said wedge driving means responsive to sensing of a deviation in grade by said sensing means.

3,939,927

COMBINED GRAVEL PACKING AND PERFORATING METHOD AND APPARATUS FOR USE IN WELL BORES

Floyd O. Bohn, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 4, 1974, Ser. No. 520,585

Int. Cl.² E21B 43/11

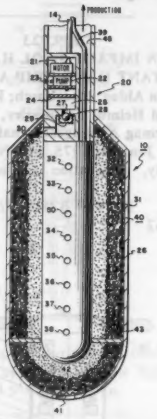
U.S. Cl. 175—4.52 **4 Claims**

1. An apparatus for perforating casing in an earth borehole, comprising:

an elongated instrument adapted to traverse said borehole;

a perforating section carried by, and being a portion of, said instrument, said perforating section having at least one perforating element therein; and

an enclosure having a gravel pack medium therein carried by said instrument and positioned in the line of fire of said at least one perforating element, whereby the activation of said at least one perforating element causes at least a portion of said perforating element to perforate said gravel pack medium prior to perforating said casing.



3,939,928

WEIGHING METHOD AND APPARATUS

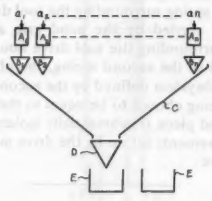
Katsuhiko Murakami, Kyoto; Tetsuo Ikeda, Otsu; Zenjiro Miebori, Muko; Kunio Noguchi, Otsu, and Kaoru Nakanishi, Shiga, all of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusyo, Kyoto, Japan

Continuation-in-part of Ser. No. 387,314, Aug. 10, 1973, abandoned. This application Oct. 1, 1974, Ser. No. 511,012

Claims priority, application Japan, Aug. 12, 1972, 47-81047

Int. Cl.² G01G 19/04; B07C 5/16

U.S. Cl. 177—25 **1 Claim**



1. Apparatus for making up a predetermined weight of objects from a plurality of objects comprising a plurality of weighing machines including means for feeding objects into said weighing machines, a common chute associated with said weighing machines for receiving articles discharged therefrom and a single pool hopper for collecting the objects from said common chute, an addition code selected circuit associated with said weighing machines for determining the combinations of actually measured values provided by said plurality of weighing machines and to calculate the combinations thereof, a first adder for selectively adding together a plurality of actually measured values in accordance with a command given by said addition code selecting circuit and thereby providing an output corresponding to the absolute value of the difference from the predetermined weight, a second adder for adding together the actually measured values including the one of the preceding combinations which most approximates that of the predetermined weight and thereby providing an output value corresponding to the absolute value of the difference from the predetermined weight, a comparator for com-

paring the outputs from said first and second adders, an addition code memory circuit for memorizing the combination code present in the first adder only when the output from the first adder is smaller than the output from the second adder, and a code reading circuit for reading the combination code memorized in the addition code memory circuit to release the weighing hoppers of the weighing machines corresponding to said codes in question.

3,939,929

APPARATUS FOR REGULATING SUPPLY QUANTITY OF TEXTILE FIBERS TO A WEIGHING DEVICE

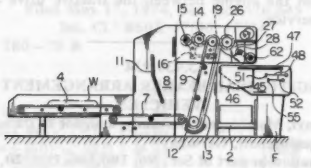
Hideo Hidaka, Aichi, and Setsuo Yamamoto, Obu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 466,723, May 3, 1974, abandoned. This application Feb. 21, 1975, Ser. No. 551,655

Claims priority, application Japan, May 9, 1973, 48-51382; May 9, 1973, 48-51383

Int. Cl.² G01G *13/04*

U.S. Cl. 177—121 **10 Claims**



1. In a spinning machine comprising a hopper for receiving textile fiber material and a weighing device for supplying a predetermined quantity of opened fiber tufts to a subsequent process by intermittently repeated unit operations, a lifting apron for carrying fiber tufts supplied into said hopper towards an upper portion of said spinning machine and an evener cylinder for preventing possible supply of fiber tufts having excess size to said weighing device and a doffer for stripping fiber tufts carried to a top portion of said lifting apron towards said weighing device, a feed chute disposed above said weighing device, a shutter disposed at a bottom aperture of said feed chute capable of closing said bottom aperture, said evener cylinder disposed at a position adjacent to a top portion of said lifting apron, a driving means for driving said lifting apron, said weighing device provided with a weigh-pan, an apparatus for regulating a supply quantity of fiber tufts to said weigh-pan in each unit supply operation, comprising in combination, means for selectively reducing a gauge between said lifting apron and said evener cylinder, a first device for actuating said gauge reducing means at a time of shortly before the completion of said unit supply operation, a second device for substantially opening said weigh-pan and closing said shutter when a predetermined final quantity of fiber tufts are accumulated in said weigh-pan during said unit supply operation.

3,939,930

VEHICLE TRACK RETENTION DEVICE

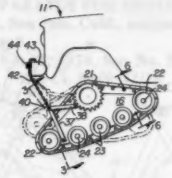
Harold S. Firstenberg, 131 Townsend St., San Francisco, Calif. 94101

Continuation-in-part of Ser. No. 372,220, June 21, 1973, Pat. No. 3,860,080. This application Sept. 3, 1974, Ser. No. 502,519

Int. Cl.² B62D *55/04*

U.S. Cl. 180—5 A **13 Claims**

1. For use with a vehicle track drive member suitable for attachment to a vehicle wheel drive wall to replace the vehicle wheel and wherein is provided a frame having a normally substantially horizontal bottom, a drive sprocket, idlers and bogie wheels rotatably mounted in said frame and an endless track extending around said sprocket, idlers and bogie wheels, said track having a plurality of sections pivotally connected together, each said section having on either side thereof a lug which protrudes inward on either side of said frame, the improvement which comprises an inverted channel extending



longitudinally and having a web, means rigidly connecting said web flush with the underside of said bottom, and flanges on the underside of said web, said flanges disposed immediately inward of the path of travel of said lugs as said track is driven by said sprocket and holding said track sections spaced below said bottom.

3,939,931

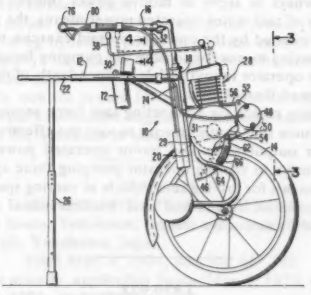
ELECTRIC STARTER DRIVE FOR MOTOR ENGAGING VEHICLE DRIVE WHEEL

William G. Benz, San Jose, Calif., assignor to Benz Vehicle Corporation, San Jose, Calif.

Filed Aug. 5, 1974, Ser. No. 494,665

Int. Cl.² B60K *17/30*

U.S. Cl. 180—13 **10 Claims**



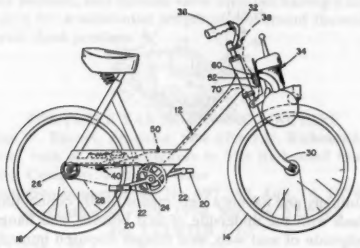
1. An electric starter unit for an engine having a drive shaft and mounted for driving a wheel of a vehicle, comprising a frame for rotatably mounting the driven wheel, a pulley mounted on the drive shaft, means for pivotably mounting the engine on the frame so that the drive shaft is selectively engageable with the driven wheel, electric starter means including a starter motor having a drive shaft, a belt connecting the starter motor drive shaft and the pulley, means for pivotably attaching one portion of the starter motor to the engine and another portion of the starter motor to the frame so that the starter motor drive shaft is movable from a first position relatively close to the engine pulley when the engine is engaged with the driven wheel and a second position further away from the engine pulley, thereby pulling the belt taut, when the engine is disengaged from the driven wheel.

3,939,932

EXERCISE APPARATUS

Henri E. Rosen, 67 Long Wharf, Boston, Mass. 02110

Filed July 22, 1974, Ser. No. 490,588
Int. Cl.² B62K 11/00
U.S. Cl. 180—33 C 12 Claims



1. A vehicle having at least one traction wheel and foot peddling exercise means connectable to said wheel comprising:

motor operated power means providing motive power for said vehicle;

control means for variably controlling the effective motive power output of said motor operated power means to drive said vehicle at variable speed;

said foot pedalling exercise means including a pair of pedals operable by the application of pumping force thereto by the vehicle operator;

drive means for connecting said exercise means said traction wheel to apply as motive power thereto independently of said motor operated power means, the pumping force exerted by the operator on said exercise means;

force sensing means for sensing the pumping force applied by the operator to said pedals independently of the pumping speed thereof; and

connecting means for connecting said force sensing means to actuate said control means to vary the effective motive power output from said motor operated power means responsive to varying operator pumping force applied to said pedals for driving said vehicle at varying speed while said exercise means and said traction wheel are connected by said drive means.

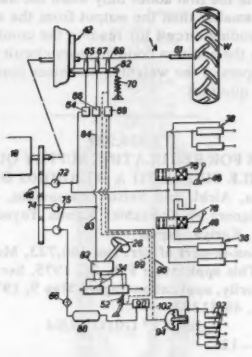
3,939,933

TRANSMISSION CONTROL SYSTEM

Anthony Clubley Armstrong, Abergavenny, Wales, assignor to Massey-Ferguson-Perkins Limited, London, England

Filed Mar. 22, 1973, Ser. No. 343,808
Claims priority, application United Kingdom, Mar. 22, 1972, 013447/72
Int. Cl.² F16D 33/04
U.S. Cl. 180—53 R 11 Claims

1. In a vehicle having an engine, a tractive drive with at least one wheel, a selectively variable torque converter driven by said engine, said torque converter being connected to said driven wheel or wheels said torque converter having a control element for varying the torque of the converter, at least one auxiliary service including a pump directly driven by said engine, the improvement comprising a control system having an actuator operatively connected to and operable on the control element, and a conduit interconnecting said auxiliary service and actuator to position the control element with said actuator upon said conduit transmitting a signal from said auxiliary service to said actuator and thereby proportion the power from the engine between the tractive drive and said auxiliary service.

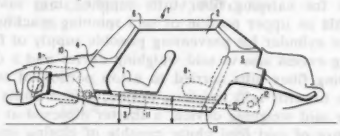


3,939,934

LONGITUDINAL BEARER ARRANGEMENT IN VEHICLES

Béla Barényi, Maichingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 190,746, Oct. 20, 1971, abandoned. This application Mar. 27, 1974, Ser. No. 455,405
Claims priority, application Germany, Oct. 22, 1970, 2051773
Int. Cl.² B62D 21/00
U.S. Cl. 180—54 R 19 Claims



1. A framework arrangement for vehicles comprising at least two parallel transversely spaced longitudinal bearer members extending only between the areas of the front and rear wheels at each side of a vehicle, said at least two longitudinal bearer members rising from the horizontal upwardly from the area of the rear wheels to the area of the front wheels, forward and rearward cross frame means for connecting said at least two longitudinal bearer members, and at least one vehicle floor connected to said at least two longitudinal bearer members and having the inclination of the longitudinal bearer members.

3,939,935

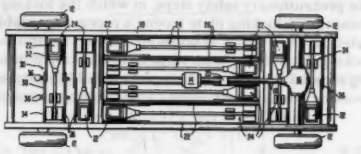
ELECTRIC POWER MEANS FOR VEHICLES

Walter L. Gill, 225 S. Buena Vista, Redlands, Calif. 92373

Filed May 17, 1974, Ser. No. 471,125
Int. Cl.² B60L 11/18
U.S. Cl. 180—65 R 10 Claims

1. A vehicle having a frame supporting an electric system and battery means for operating said system, comprising two relatively reciprocatory parts on said frame means supporting one said part from the other said part for reciprocatory movement in accordance with variations in the supporting medium, at least one of said parts being reciprocatory relative to the vehicle frame, means connected between such parts for converting such reciprocal movement into rotary mechanical

power, power reserve means receiving and storing said rotary mechanical power, and current generating means for recharging said battery and driven by said power reserve means, said



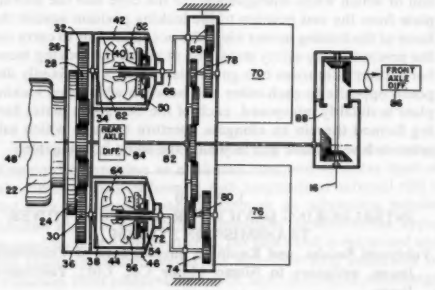
battery means comprising a plurality of batteries and said one part comprising means individually supporting said batteries in spaced relation for reciprocal movement relative to the vehicle frame.

3,939,936

DUAL CONVERTER TRANSMISSION ARRANGEMENT

David S. Vinton, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 17, 1974, Ser. No. 470,845
Int. Cl.[2] B60K *17/06*, *17/34*
U.S. Cl. 180—70 R 1 Claim



1. In combination with a vehicle including forward and rearward means rotatable to drive said vehicle, and a motor including rotary output means;

a first output gear train drivingly connected with said rotary output means;

a first output shaft rotated by the output gear of said first output gear train;

a second output gear train drivingly connected with said rotary output means;

a second output shaft rotated by the output gear of said second output gear train;

each output gear being independently driven through a respective one of said output gear trains to in turn drive a respective output shaft;

a first torque converter connected to said first output shaft to be driven thereby;

a second torque converter connected to said second output shaft to be driven thereby;

a third shaft rotatably supported relative to said vehicle and connected to the forward and rearward means, so that rotation of said third shaft rotates said forward and rearward means to drive said vehicle;

a first multi-speed transmission drivingly connecting said third shaft and first torque converter;

a second multi-speed transmission drivingly connecting said third shaft and second torque converter, so that said third shaft is driven through both said first and second torque converters by the rotary output means;

the first and second torque converters being spaced laterally of each other relative to the forward-rearward axis of the vehicle on either side of the centerline of the vehicle;

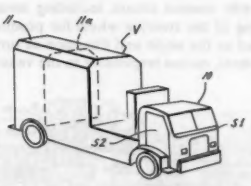
the first and second transmissions being spaced laterally of each other relative to the forward-rearward axis of the vehicle on either side of the centerline of the vehicle.

3,939,937

SAFETY APPARATUS FOR SERVICE VEHICLE

James W. Moberg, San Jose, Calif., assignor to Browning-Ferris Industries, Inc.

Filed Nov. 1, 1974, Ser. No. 519,840
Int. Cl. B60k *41/24*
U.S. Cl. 180—77 D 7 Claims



1. Apparatus for operating a service vehicle making frequent starts and stops having a primary engine, an automatic transmission and first and second drive stations, wherein said automatic transmission has a gearshift lever at said first station, and wherein said gearshift lever is maintained in a drive position under such conditions, comprising:

brake-set means mounted at said second drive station for actuating the brakes of said vehicle;

safety means mounted at said second drive station in operative connection with said automatic transmission for neutralizing said automatic transmission with said gearshift lever remaining in said drive position substantially simultaneously with said brake-set means actuating the brakes of said vehicle;

pump means operably connected to the primary engine for providing hydraulic power to a power take-off unit substantially simultaneously with the actuation of said brakes; and

throttle control means for adjusting the throttle of said internal combustion engine substantially simultaneously with the actuation of said brakes.

3,939,938

AUTOMOTIVE STEERING SYSTEM

Naohiko Inoue, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 4, 1974, Ser. No. 447,740
Claims priority, application Japan, Mar. 5, 1973, 48-25793; Mar. 20, 1973, 48-31388
Int. Cl.[2] B62D *5/08*
U.S. Cl. 180—79.2 R 11 Claims

1. An automotive power-assisted steering system comprising:

a steering wheel;

a steering shaft carrying the steering wheel and a steering linkage drivingly connected to steered road wheels;

a hydromechanical leverage unit mechanically connected to the steering linkage and movable between a right-turn positional range to drive the steering linkage into a condition effecting right-turn of the steered road wheels and a left-turn positional range to drive the steering linkage into a condition effecting left-turn of the steered road wheels;

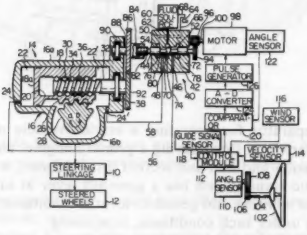
a rotary piston-valve rotatable about a longitudinal axis thereof and longitudinally movable between first and second positional ranges across an equilibrium position depending upon its rotational position about said axis, the

rotary piston-valve being hydraulically connected to said leverage unit for moving the leverage unit into the right-turn or left-turn positional range when moved to the first or second positional range, respectively, thereof or holding the leverage unit in a locked condition when moved to said equilibrium position;

a valve re-set mechanism operatively connected between the leverage unit and the rotary piston-valve and operative to be driven by the leverage unit for longitudinally moving the rotary piston-valve from the first or second positional range back to the equilibrium when the leverage unit is moved by the piston-valve to the right-turn or left-turn positional range, respectively, thereof;

a drive source having an output shaft drivingly connected to the rotary-valve for driving the piston-valve about said axis when actuated; and

an electric control circuit including means responsive to turning of the steering wheel for producing a first signal related to the angle and direction of turning of the steering wheel, means responsive to the velocity of the vehicle



for producing a second signal related to the velocity of the vehicle, means responsive to an external force imparted sideways to the vehicle for producing a third signal related to the intensity of the force, a control module receiving the first second and third signals from the means for thereby producing an output signal representative of a desired angle of steering, means for producing a fourth signal representative of the rotational position of the output shaft of the said drive source, a comparator operative to compare the output signal from said control module with the fourth signal for producing an output signal representative of a difference between the two signals which are introduced thereto, an analog-to-digital converter for converting the output signal from the comparator into a pulsating signal, and a drive pulse generator for supplying to said drive source a pulsating current in accordance with the pulsating signal from the analog-to-digital converter, whereby the drive source is actuated to have its output shaft rotated in a direction and through an angle dictated by the pulsating current from the pulse generator.

3,939,939

TRANSMISSION LOCKING DEVICE

Nobuo Okazaki, Chigasaki, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

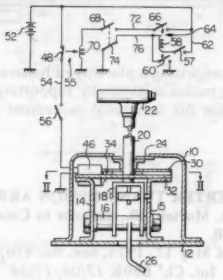
Filed Sept. 18, 1974, Ser. No. 507,121

Claims priority, application Japan, Sept. 20, 1973, 48-109343[U]

Int. Cl. B60r *21/10*

U.S. Cl. 180—82 C **3 Claims**

1. A locking device for preventing an automatic transmission of a motor vehicle from being shifted to a driving gear when a vehicle occupant fails to carry out precautionary safety steps to protect the occupant, comprising a selector lever movable to control setting of said automatic transmission, a locking member movable from a rest position to a locking position for directly locking said selector lever in a neutral position, electric means for, when actuated, moving the locking member from the rest position to the locking position, and sensing means for actuating the electric means when the sensing means sense that the occupant fails to carry out the precautionary safety steps, in which the locking member comprises a locking plate having a recess engageable with the selector lever which is positioned in the neutral position for locking the selector lever when in the locking position and biasing means urging the locking plate to hold the same in the rest position when the occupant carries out the precautionary



safety steps and the electric means comprises a solenoid the coil of which when enerigized urges the core and the locking plate from the rest position to the locking position against the force of the biasing means when the occupant fails to carry out the precautionary safety steps, and in which the locking member further comprises two guide plates which are fixedly disposed opposite to each other and between which said locking plate is slidably interposed, each of the two guide plates having formed therein an elongate aperture through which said selector lever passes and in which the same is swingable.

3,939,940

INTERLOCKING DEVICE FOR A MANUAL POWER TRANSMISSION SYSTEM

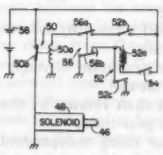
Yukiyoshi Sasabe, and Kunihiko Suzuki, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sept. 20, 1974, Ser. No. 507,880

Claims priority, application Japan, Nov. 5, 1973, 48-127134[U]

Int. Cl. B60r *21/10*

U.S. Cl. 180—82 C **4 Claims**



1. In an automotive manually operated power transmission having a gear-shift mechanism including a rotatable guide member for a striking rod, an interlocking device for interlocking the gear-shift mechanism responsive to incompletion of prescribed manipulative procedure taken by a vehicle occupant, comprising a first movable member which is movable with a movable member forming part of said gear-shift mechanism, a second movable member having a first position disengaged from said first movable member and a second position in interlocking engagement with the first movable member, electromagnetically operated actuating means having an operative condition to actuate said second movable member into said second position thereof, an electric control circuit responsive to completion of said prescribed manipulative proce-

dure taken by the vehicle occupant and in which said first movable member is in engagement with said rotatable guide member.

3,939,941

FUSE CORD

Daniel Steele, Stevenston, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 28, 1972, Ser. No. 229,810
Int. Cl.² C01V 1/10
U.S. Cl. 181—116 8 Claims

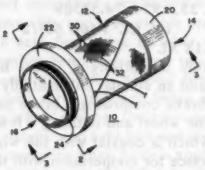
1. A method of seismic prospecting wherein a detonating fuse-cord comprising an explosive core and an outer layer of elastomeric material formed with longitudinal external ribs is fed in a continuous manner through an advancing tubular conduit to lie in a position substantially parallel to the upper ground layer of a prospect area, the fuse-cord is detonated and the resulting seismic waves are recorded after reflection or refraction from subterranean rock layer interfaces, said longitudinal external ribs enabling said fuse-cord to pass through the advancing tubular conduit with less drag and greater abrasion resistance than a plain fuse-cord without the external ribs.

3,939,942

ELECTROACOUSTIC TRANSDUCERS

David E. Gore, 900 N. Broadway, Suite 725, Santa Ana, Calif. 92701

Filed Apr. 22, 1974, Ser. No. 462,608
Int. Cl.² G10K 13/00; H04R 7/00
U.S. Cl. 181—157 15 Claims



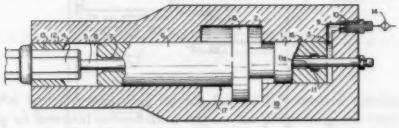
1. A wave transmission line comprising a cylindrical having a radially pulsating thin surface; and a mechanical driving force directed on a circumference of the cylinder in an axial direction to deform the surface of the cylinder.

3,939,943

LUBRICATION OF PISTON OPERATED DRILL WITH CENTRAL FLUSHING TUBE

Pekka Salmi, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed Apr. 18, 1975, Ser. No. 569,532
Claims priority, application Finland, Apr. 25, 1974, 1269/74
Int. Cl.² F16N 25/02
U.S. Cl. 184—6.14 2 Claims



1. A drill means, which comprises:

body means having an axial, generally cylindrical, interior space, said body means having an inlet means;

first cylindrical piston means axially slidable between a first position and a second position within said cylindrical space, the outer surface of said first piston means being in sliding contact with an inner surface of said body means,

said first piston means having an axially disposed extension, said extension being a second piston means axially slidable with said first piston means;

said first piston means and said second piston means surrounding an axial flushing tube means, said flushing tube means and said first and second piston means defining a first annular oiling space;

said flushing tube means, said first piston means and said body means defining a second annular oiling space, said flushing tube means, said second piston means and said body means defining an annular pumping space; and

a source of lubricating fluid connected to said inlet means;

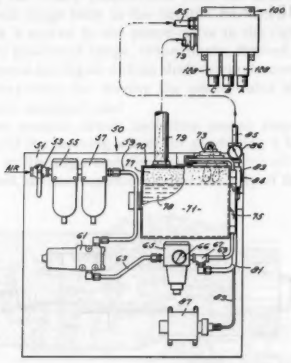
first one-way valve means communicating with said inlet means for preventing said source of lubricating fluid from communicating with said pumping space as said first piston means is moving towards said second slidable position and for permitting said source to communicate with said pumping space as said first piston means is moving towards said first slidable position; and

second one-way valve means communicating with said first annular oiling space for preventing said second annular oiling space from communicating with said pumping space as said first piston means is moving toward said first slidable position and for permitting said pumping space to communicate with said second annular oiling space as said first piston means is moving toward said second slidable position.

3,939,944
OIL-MIST LUBRICATION SYSTEM

William A. Mitchell, and Charles V. Thayer, both of Springfield, Vt., assignors to Bryant Grinder Corporation, Springfield, Vt.

Filed July 24, 1974, Ser. No. 491,572
Int. Cl.² F01M 1/16
U.S. Cl. 184—6.26 3 Claims



1. An oil-mist lubrication system for bearings on a machine, comprising:

a an oil mist generating means;

b. a blender-distributor unit, said unit comprises:

1. a body having an air chamber and an oil-mist chamber;

2. at least one blending nozzle means connecting with said air chamber;

3. an oil-mist delivery means for each blending nozzle means connected with said oil-mist chamber and each mounted coaxially with a respective one of said blending nozzle means, each said oil-mist delivery means comprises a tube extending from said oil-mist chamber into the larger diameter of its associated said blending nozzle means providing a blending area for producing lower density oil-mist;

c. an air supply means, said air supply means comprises:

1. means to adjustably control main air supply means, said main air supply means being connected to said oil mist generating means to produce an adjustably controlled high density oil mist;

2. means to control bypass air supply means, said bypass air supply means being connected to said air chamber of said blender-distributor unit to produce an adjustably controlled air supply to said air chamber;

d. means for distributing said adjustably controlled high density oil-mist to said oil-mist chamber of said blender-distributor unit; and

e. means for distributing said lower density oil-mist from said blending area to selected areas of said machine, whereby said lower density oil-mist is reclassified on bearings of a machine as its exits through the orifice of a nozzle

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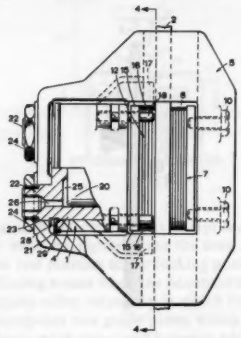
3,939,945
CLOSED-LOOP TYPE DISC BRAKE

Gordon Alfred Habgood, Shipston-on-Stour, England, assignor to Girling Limited, Birmingham, England

Filed July 22, 1974, Ser. No. 490,662
Claims priority, application United Kingdom, July 24, 1973, 35205/73
Int. Cl.² F16D 55/228
U.S. Cl. 188—73.4 7 Claims

1. An hydraulically-operated disc brake for a vehicle comprising a rotatable disc, friction pad assemblies for engagement with opposite faces of said disc, an hydraulic actuator for applying said friction pad assemblies to said disc located on one side of said disc, said hydraulic actuator comprising a stationary housing incorporating spaced arms projecting towards said disc, and first and second oppositely acting pistons movable relative to said housing, said second piston being of an axial length substantially equal to that of said housing, a yoke straddling a portion of the periphery of said disc and fitting loosely over said housing and said arms, said yoke being movable with respect to said housing in a direction parallel with the axis of said disc, one of said friction pad assemblies hereinafter referred to as "a directly actuated friction pad assembly" being applied directly to said disc by said first piston and the other friction pad assembly hereinafter referred



to as "an indirectly actuated friction pad assembly" being applied to said disc by said second piston which acts on said indirectly actuated friction pad assembly through said yoke, a rigid connection between said yoke and said second piston constructed and arranged so that the drag on said indirectly actuated friction pad assembly is transmitted to said housing only through said second piston, flexible sealing boots connected between said housing and each piston, and said directly actuated friction pad assembly being guided for movement with respect to said disc between said arms which take the drag on said directly actuated friction pad when the brake is applied so that the drag on said indirectly actuated pad assembly is taken by said housing through said second piston independently of said arms.

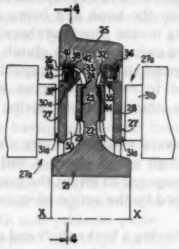
3,939,946
ASSEMBLY COMPRISING A WHEEL AND A DISC BRAKE DISC, IN PARTICULAR FOR A RAILWAY VEHICLE

Jacques Pierre, Belleville, and Pierre Simon, Pont-a-Mousson, both of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Oct. 10, 1974, Ser. No. 513,786
Claims priority, application France, Oct. 15, 1973, 73.36659; Sept. 25, 1974, 74.32309
Int. Cl.² F16D 65/12
U.S. Cl. 188—218 XL 26 Claims

1. An assembly comprising a wheel having a radially-extending web and an annular substantially axially-extending surface, a disc brake comprising a brake pad structure movable axially of the wheel and defining a brake pad surface, a disc structure which is coaxial with the wheel and defines a braking first surface for cooperation with the brake pad surface and defines a radially-extending friction second surface axially opposed to said first surface, the web structure defining a radially-extending third surface adjacent to said second surface for frictional engagement with said second surface upon application of the brake pad structure against the disc structure for braking, and a device centering the disc structure on the substantially axially extending surface of the wheel, one

of said second and third surfaces having a coefficient of friction on the other of said second and third surfaces which



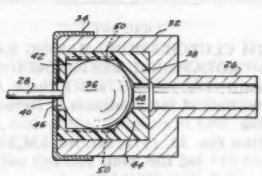
exceeds the coefficient of friction of said first surface on the brake pad surface.

3,939,947

DASHPOT FOR EITHER PUSH OR PULL DAMPING

Arthur M. Cohen, deceased, late of Westport, Conn. (by Ruth S. Cohen); Irving Evall, Freeport, and Leonard Zalkin, executors, Woodmere, both of Conn., assignors to Airpot Corporation, Norwalk, Conn.

Filed Aug. 19, 1974, Ser. No. 498,585
Int. Cl.² F16F 9/34
U.S. Cl. 188—282 **23 Claims**



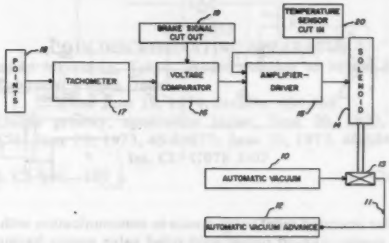
1. In a dashpot comprising a cylinder, a piston sealingly slidable in said cylinder, a piston rod operatively connected to said piston for moving the latter and fluid flow means extending through said piston; the improvement which comprises a first valve member operatively connected to said piston rod for movement therewith, and a reversible second valve member within which said first valve member is received, said second valve member being associated with said first valve member in either a first or a second orientation relative thereto, said second valve member being mounted on said piston and having a fluid passage therethrough defining a part of said fluid flow means, and said first and second valve members having parts operative when force is applied to said piston rod in one axial direction or the other to close or open said fluid passage respectively, one orientation of said second valve member relative to said first valve member closing said fluid passage when said piston rod is urged in one axial direction and the other orientation of said second valve member relative to said first valve member closing said fluid passage when said piston rod is urged in the other axial direction.

3,939,948

BRAKE CONTROLLED IGNITION RETARDER

Thomas A. Kalogerson, Bloomington, Minn., and Joseph E. Dandois, Montoursville, Pa., assignors to Optimizer Control Corporation, Minneapolis, Minn.

Division of Ser. No. 231,766, March 3, 1972, Pat. No. 3,871,341, which is a continuation of Ser. No. 100,081, Dec. 21, 1970. This application Jan. 16, 1975, Ser. No. 541,592
Int. Cl.² B60K 29/02
U.S. Cl. 192—3 R **10 Claims**



1. An ignition retarding device for an automotive vehicle having an internal combustion engine for propelling the vehicel and brakes for stopping the vehicle, in which the internal combustion engine has temperature sensing means controlled thereby for indicating when the temperature of the engine is excessively high, an ignition distributor adjustable to vary the ignition timing, means including a fluid motor for adjusting the ignition timing, and means including a connection between said fluid motor and the intake manifold of the engine for normally causing said motor to adjust the distributor to advance the timing as the vacuum in said intake manifold increases; and in which the brakes are controlled by a brake control having a switching device which is actuated to indicate the actuation of the brakes when the brake control is so operated; said ignition retarding device comprising:

a control device for insertion into the connection between the motor and the intake manifold of the engine to prevent advance of the timing from an increase in the vacuum in the intake manifold;

control means for said control device and designed for connection to the brake control switching device and effective when so connected and when said brake control is operated to actuate the brakes to cause said control device to prevent advance of the timing from the intake manifold vacuum;

and means connected to said control means and designed for connection to the temperature sensing means and effective when so connected and when the temperature of the engine is excessively high to prevent said control device from preventing advance of the timing from the intake manifold vacuum.

3,939,949

HYDRAULIC SYSTEM FOR BRAKING TRUCK ENGINES

John D. Hale; Frank L. Hale, both of P.O. Box 11, Swisshome, Oreg. 97480, and Samuel J. Hale, Jr., Star Rte., Box 33, Chesire, Oreg. 97419

Filed Jan. 24, 1975, Ser. No. 543,802
Int. Cl.² F16D 57/02
U.S. Cl. 192—3 TR **5 Claims**

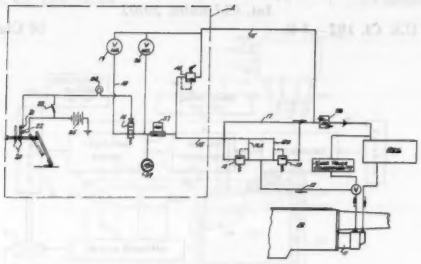
1. An energy absorbing system for a vehicle drive train of the type having a power take-off pump associated therewith, said system comprising,

a control panel for said system located at the driver's station, said control panel including a driver settable relief valve in fluid communication with said pump, a system pressure indicator,

a relief valve by-pass line,

a solenoid actuated valve in the relief valve by-pass line operable in a closed position to divert pump output through said relief valve,

switch means in circuit with said solenoid valve and operable to close said solenoid valve during vehicle deceleration, and



pilot operated relief valve means in communication with the power take-off pump, said relief valve means having its pilot in fluid communication with said pump and also with the driver controlled relief valve whereby upon closure of the by-pass line by said solenoid during vehicle deceleration the build up of fluid pressure acting on the pilot may be regulated by adjustment of the driver operated relief valve which in turn regulates the opening and closing of the pilot operated relief valve means to affect loading of the power take-off pump for energy absorbing purposes.

3,939,950

FLUID OPERATED BRAKES AND REVERSING CLUTCHES FOR WINCH DRUMS

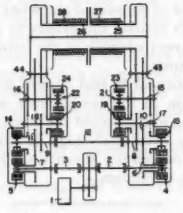
Kazumori Nishida; Toshinori Kawahashi, both of Hirakata, and Yoshimasa Tanaka, Kyoto, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakasho, Japan

Filed Mar. 5, 1974, Ser. No. 448,239

Claims priority, application Japan, Mar. 5, 1973, 48-25152

Int. Cl.[2] F16D *67/04;* B66D *1/26*

U.S. Cl. 192—4 R **4 Claims**



1. An operating mechanism for a double-drum winch which comprises:

a. a pump for pumping hydraulic oil from a source thereof into a hydraulic oil supply circuit of the mechanism,

b. low and high speed clutches capable of being hydraulically engaged to transmit power from a power source and being disengaged by the action of spring means provided respectively therein,

c. a speed selecting control valve situated between said hydraulic oil supply circuit and a return circuit of said hydraulic oil and capable of selectively permitting hydraulic communication between one of said low and high speed clutches and said pump,

d. a hook hoisting rotary clutch connected to said low and high speed clutches and capable of being hydraulically engaged to hoist the hook and being disengaged by the action of spring means provided therein,

e. a hook dropping rotary clutch connected to said low and high speed clutches and capable of being hydraulically engaged to drop the hook and being disengaged by the action of spring means provided therein,

f. a boom upward swinging rotary clutch connected to said low and high speed clutches and capable of being hydraulically engaged to swing the boom upward and being disengaged by the action of spring means provided therein,

g. a boom downward swinging rotary clutch connected to said low and high speed clutches and capable of being hydraulically engaged to swing the boom downward and being disengaged by the action of spring means provided therein,

h. a hook brake having a brake shaft and connected through a one-way clutch to said hook dropping rotary clutch,

i. a boom brake having a brake shaft and connected through a one-way clutch to said boom downward swinging rotary clutch,

j. hydraulically operated variable control valves situated between said hydraulic oil supply circuit and said return circuit in the vicinity of the respective rotary clutch and capable of selectively permitting hydraulic communication between said respective rotary clutch and said pump,

k. a relief circuit situated between said hydraulic oil supply circuit and said return circuit, both the circuits being located between said speed selecting control valve and said pump, and provided therein with a pressure regulator valve to maintain the hydraulic oil pressure supplied into one of said low and high speed clutches at a predetermined constant value, wherein said low and high speed clutches and said rotary clutches are permitted to hydraulically communicate with said return circuit respectively through said speed selecting control valve and said hydraulically operated variable control valves when said clutches are not operated.

3,939,951

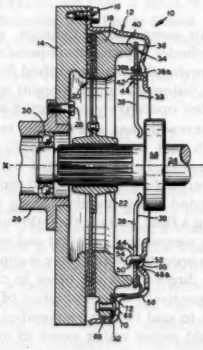
DIAPHRAGM CLUTCH SPRING HAVING RADIAL AND ROTATIONAL RESTRAINTS

William Howard Sink, Auburn, and Richard Allen Flotow, Fort Wayne, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 23, 1974, Ser. No. 535,338

Int. Cl.[2] F16D *13/71*

U.S. Cl. 192—89 B **1 Claim**



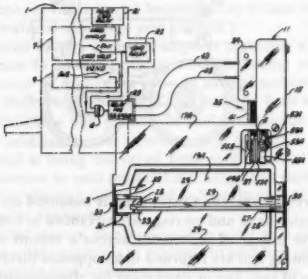
1. In a clutch the combination comprising:

a. a rotatable flywheel;
b. a cover secured to said flywheel for rotation therewith;
c. an axially movable driven member positioned adjacent said rotatable flywheel and movable into driving engagement therewith;
d. an axially movable pressure plate disposed between said cover and said driven member for engaging said driven member with said flywheel;
e. resilient strap means drivingly connecting said pressure plate to said cover and permitting relative axial movement therebetween;
f. a diaphragm spring disposed between said cover and pressure plate having an annular bearing portion engaging said cover and said pressure plate to move the latter into engagement with said driven member and a plurality of integral radially inwardly extending levers defined by radial slots in said spring operable to move said spring out of contact with said pressure plate;
g. a series of spaced openings formed in said diaphragm spring and at the radial extremity of said slots and adjacent said bearing portion of said spring, each opening defining a pair of flat, radially extending side walls on said levers and a flat, outer horizontally extending connecting wall adjacent the radially inward edge of said bearing portion, said side walls being connected to said outer wall by radiused corners;
h. axially extending radial supporting means integral with said cover, extending through certain of said spaced openings and having a flat, circumferentially extending surface engaging said flat, outer, horizontally extending connecting wall between said radiused corners for preventing relative radial movement between said cover and said diaphragm spring; and
i. axially extending rotational support means integral with said cover, located radially inwardly of said radial support means, extending through certain other of said spaced openings and extending across said openings from one of said side walls to the other of said side walls and having flat radial side edges engaging said pair of flat side walls on said levers for preventing relative rotational movement between said cover and said diaphragm spring.

3,939,952
CONTROL FOR A VENDOR INCLUDING CARD RETENTION MEANS

James T. Schuller, St. Louis County, and Anton Okolischan, Crestwood, both of Mo., assignors to UMC Industries, Inc., New York, N.Y.

Filed Oct. 30, 1974, Ser. No. 519,114
Int. Cl.² G07F *7/08*
U.S. Cl. 194—4 C **4 Claims**



1. A control for a vendor operable by a coded card comprising:

a validator in which a customer inserts a card at one end thereof with the card in horizontal position, said validator being operable to validate the card, to enable a vend if the card is valid, to reject the card back to the customer at said one end if the card is invalid, and to feed the card in horizontal position out of the validator at its other end on a vend;

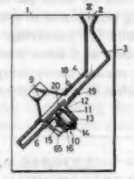
means adjacent the other end of the validator for receiving a validated card in horizontal position from the validator as it is fed out of the validator upon a vend and releasably retaining it in horizontal position for verification of the insertion of a proper card by the customer; and

means operable upon a vend for operating said receiving means to release a previously received card to storage.

3,939,953
COIN DISCRIMINATING APPARATUS

Kuniaki Miyazawa, Tokyo, Japan, assignor to Mitani Shoji Kabushiki Kaisha, Japan

Filed June 18, 1974, Ser. No. 480,466
Claims priority, application Japan, June 20, 1973, 48-68676; June 20, 1973, 48-68677; June 20, 1973, 48-68678
Int. Cl.² G07F *3/02*
U.S. Cl. 194—100 A **14 Claims**



1. A coin discriminating apparatus comprising: a coin detector means for sensing a coin fed to the apparatus and for producing a starting signal; a mechanical filter mechanism including a speaker, a pressure sensitive senser, a horizontally and vertically inclined passageway for said coin, a stopper for projection into said passageway, said coin fed to the apparatus being held between said speaker and said senser in said passageway by said stopper as said coin rolls down said passageway; a selective oscillator circuit having a positive feedback loop connected in series with said senser and speaker in which said mechanical filter mechanism is interposed to generate an oscillation output at the same frequency as the mechanical natural frequency of the coin fed to the apparatus; a one cycle selector circuit connected to said selective oscillator circuit adapted to take out one period of the oscillation frequency generated at said selective oscillator circuit; means connected to said one cycle selector circuit for producing impulses whose number depends on the wave length of said one period each time a coin is fed to the apparatus; and means connected to said means for producing impulses for determining whether the number of said impulses is within a range predetermined by a genuine coin to be discriminated.

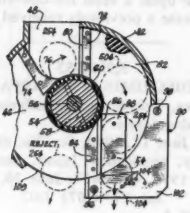
3,939,954
CHECK RECEIVING AND TESTING APPARATUS

Terence John Collins, Schaumburg, Ill., assignor to Qonsar Corporation, Elk Grove Village, Ill.

Filed Mar. 18, 1974, Ser. No. 451,890
Int. Cl.² G07F *3/02*
U.S. Cl. 194—102 **35 Claims**

1. In an apparatus adapted to receive checks including coins, tokens and the like wherein detecting means are provided for inspection of the checks, the improvement comprising means for receiving the checks and separating means for the checks whereby the checks are moved one at a time to the detecting means, said separating means comprising a first engaging surface for engaging one side of said checks, a sec-

ond engaging surface positioned in spaced relationship with said first surface for engaging the opposite side of said checks, drive means for driving at least one of said surfaces relative to the other surface whereby checks in overlying relationship are engaged one by the first surface and the other by the second surface to separate the checks one from the other due to movement of the one check relative to the other check, a



barrier ramp positioned at least partially between said surfaces, said ramp being positioned in spaced relationship to the position of said means for receiving the checks, separated checks being driven one at a time into engagement with said ramp, said detecting means comprising means for measuring the diameter of said checks while they are in engagement with the ramp.

3,939,955

MECHANISM FOR SELECTIVELY CONTROLLING AT LEAST TWO FUNCTIONS IN A TYPEWRITER

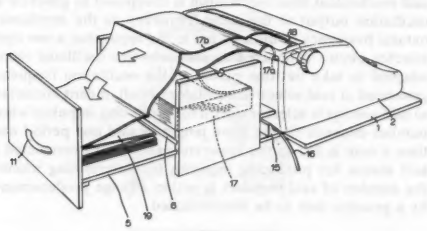
Ulrich Menzi, Yverdon, Switzerland, assignor to Paillard S.A., Sainte-Croix, Switzerland

Filed May 1, 1974, Ser. No. 465,850

Claims priority, application Switzerland, May 8, 1973, 6503/73

Int. Cl.² B41J *21/08, 25/02, 25/04, 25/06*

U.S. Cl. 197—17 9 Claims



1. In a typewriter, a mechanism for selectively controlling at least two functions, said mechanism comprising a driving member, a single cam cooperating with said driving member, control levers for each of said functions, an actuating member acting on said control levers, a selector member carried by said actuating member for selectively coupling said actuating member to the control lever of the selected function, a single lever providing means for placing said cam in driving contact with said driving member and for positioning said selector member, and means for selectively acting on said lever to select each of said functions.

3,939,956

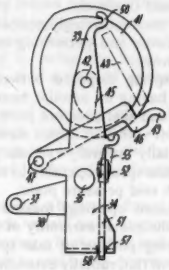
HOLDER FOR TYPEWRITER PAPER

Sam Stamou, 178 Prescott Ave., Toronto, Ontario, Canada (M6N 3H1)

Filed July 24, 1974, Ser. No. 491,365

Int. Cl.² B41J *15/04, 29/06*

U.S. Cl. 197—133 R 6 Claims



1. A holder for typewriter paper comprising a frame having upright and side portions and open front and rear ends, said upright side portions having means for supporting a roll of paper, an upper and a lower shelf between the upright side portions, and means supporting said upper and lower shelves for frontward and rearward sliding, the upper shelf being capable of supporting a stack of consecutively joined sheets of rectangular paper to be fed to a typewriter and the lower shelf being movable from under the upper shelf to a position where it can receive said paper after typing , and one of said shelves being withdrawable from between said uprights and insertable rearwardly behind the other of said shelves on said supporting means when said other shelf is partially withdrawn forwardly, to provide a paper support of increased area.

3,939,957

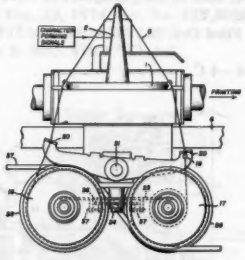
CARRIAGE OPERATED RIBBON DRIVE AND REVERSE MECHANISM

John R. Bittner, Waynesboro, Va., assignor to General Electric Company, Waynesboro, Va.

Filed Dec. 11, 1973, Ser. No. 423,734

Int. Cl.² B41J *33/14*

U.S. Cl. 197—151 3 Claims



1. A printer wherein a print head is mounted on a carriage and the print head and carriage are advanced in one direction to traverse a line of movement across a record medium to effect printing and are returned in an opposite direction to the beginning of said line of movement for effecting printing on a following line, an inked ribbon drive mechanism, means for causing said mechanism to move a ribbon in a stop and go and continuous movement across said record medium, said drive mechanism comprising a pulley, a driving means for moving said ribbon, a drive belt mounted to be stationary with respect to carriage and print head movement, said drive belt being

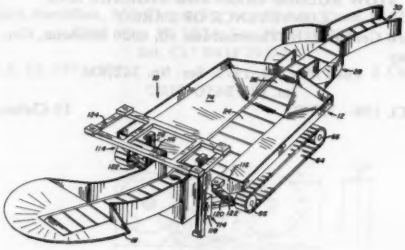
wrapped around said pulley to drive the driving means in response to advance of said carriage and said print head.

3,939,958

VARIABLE DISCHARGE SURGE FEEDER AND BOLTER

Harley G. Pyles, Fairmont, W. Va., assignor to Mining Equipment Division of FMC Corporation, Fairmont, W. Va.

Filed Jan. 8, 1974, Ser. No. 431,796
Int. Cl.² B65B 65/02
U.S. Cl. 198—7 R 8 Claims



1. An apparatus for handling disintegrated material including,

a base member having ground traction means,

an elongated body member supported on said base member,

vertical plate members secured to opposite sides of said body member,

said body member and said vertical plate members cooperating to define a material receiving bin,

a continuous conveyor positioned within said material receiving bin,

said continuous conveyor having a material receiving end portion, a material discharge end portion and a pivotal section positioned closer to said material discharge end portion than said material receiving end portion, said pivotal section arranged to pivot upwardly about a horizontal transverse axis and control the discharge of material from said discharge end portion,

said continuous conveyor adapted to receive material at said receiving end portion of said continuous conveyor and convey the material longitudinally in said bin toward said material discharge end portion,

said pivotal section arranged to pivot upwardly a sufficient distance to a first position so that during continuous operation of said conveyor said pivotal section substantially stops the discharge of said material from said material discharge end portion of said continuous conveyor while said continuous conveyor is in operation and other material is being conveyed from said material receiving end portion to said material discharge end portion,

means for pivoting said pivotal section having at least one hydraulic cylinder,

said pivotal section also arranged to pivot to a plurality of intermediate positions in addition to said first position for discharging said materials at preselected rates,

sensing means positioned within said material receiving bin for indicating the quantity of said material within said bin, and

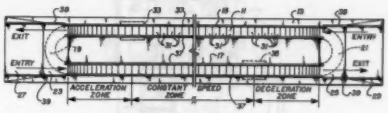
said hydraulic cylinder responsive to the indication of the quantity of said material within said bin by said sensing means to position said pivotal section.

3,939,959

ACCELERATING AND DECELERATING MOVING WALKWAY

Phillip Elwyn Dunstan, and Sam Shapiro, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 11, 1974, Ser. No. 450,093
Int. Cl.² B66B 9/12
U.S. Cl. 198—16 MS 17 Claims



1. An accelerating and decelerating moving walkway comprising:

1. path of travel defining means for defining an oval, substantially planar, path of travel;

2. a plurality of overlapping platforms mounted in said path of travel defining means for movement about said oval, substantially planar, path of travel;

3. overlapping control means for controlling the amount of overlap between adjacent platforms of said plurality of overlapping platforms, said overlapping control means comprising:

a. cam means mounted beneath said plurality of overlapping platforms for controlling the position of cam follower means associated with each of said plurality of platforms;

b. cam follower means associated with and mounted on each of said plurality of platforms so as to contact with and be positioned adjustable by said cam means in a plane lying parallel to the plane defined by said oval, substantially planar, path of travel; and

c. flexible extendable and retractable means running between pairs of adjacent platforms of said plurality of platforms and operatively connected to said cam follower means such that the position of said cam follower means controls the length of said flexible extendable and retractable means running between pairs of adjacent platforms to thereby control the amount of platform overlap; and,

4. drive means adapted to be selectively coupled to said plurality of platforms for moving said plurality of platforms about said oval, substantially planar, path of travel.

3,939,960

VACUUM CARTON TRANSFER APPARATUS AND METHOD

Silvio T. Farfaglia, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 7, 1973, Ser. No. 395,029
Int. Cl.² B65G 47/52
U.S. Cl. 198—20 R 17 Claims

1. Apparatus comprising:

an intermittently actuated conveyor for moving a container to a first station located thereon;

a continuously actuated conveyor having a second station located immediately above a portion of a continuously moving surface thereof; and

transfer means for moving a container from said first station to said second station, said transfer means comprising

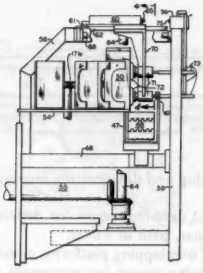
one or more suction cup means for producing a substantially air-tight seal with a generally vertical side surface of the container to be transferred,

vacuum supply means operably connected to said one or more suction cup means for providing a vacuum thereto,

reciprocating means for moving said one or more suction cup means in a generally horizontal straight line from

a first position at which contact is made by said suction cup means with said side surface of a container located at said first station to a second position at which said container is released by said suction cup means at said second station, and

vacuum control means interposed between said vacuum supply means and said one or more suction cup means



for applying a vacuum to said one or more suction cup means when said reciprocating means is in said first position and traveling between said first position and said second position and for interrupting the vacuum supply to said one or more suction cup means in response to arrival of said reciprocating means at said second position.

3,939,961

APPARATUS FOR CONVEYING PILES OF NEWSPAPERS IN PERPENDICULAR DIRECTIONS

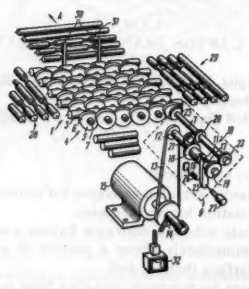
Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6; Leonid Pavlovich Grachev, ulitsa Lva Tolstogo, 7, kv. 32, both of Moscow; Grigory Iosifovich Zax, ulitsa Mechnikova, 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, Moscow, and Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev, all of U.S.S.R.

Filed June 12, 1974, Ser. No. 478,704

Claims priority, application U.S.S.R., Dec. 21, 1973, 1975407

Int. Cl.² B65G *47/54*

U.S. Cl. 198—25 **1 Claim**



1. An apparatus for conveying piles of newspapers in mutually perpendicular directions, including a main driven rollerway having a load supporting surface for conveying piles of newspapers in a first direction, the rollers of the main rollerway being mounted to provide a space between each pair of the adjacent ones of the rollers, rotatable drive shafts, and discs mounted on the rotatable drive shafts in the spaces and serving to convey the piles of newspapers in a second direction perpendicular to the first direction, the improvement that each roller of the main rollerway is provided with portions of reduced diameter, the number of the reduced portions being equal to the number of rotatable drive shafts, the rotatable drive shafts extending through the portions of reduced diameter under the main rollerway, each disc being constituted by two portions, one of the portions being a semi-circle and the other portion adjacent the one portion being a semi-ellipse, the length of the major axis thereof being equal to the diameter of the semi-circle, and the length of the minor axis thereof being shorter than the spacing between of the axis of the shaft and the load supporting surface of the main rollerway on which the pile of newspapers is being conveyed.

3,939,962

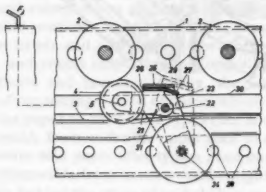
STOW ROLLER TRAIN FOR STORAGE AND CONVEYANCE OF CARGO

Richard Gebhardt, H. Thomastrasse 10, 6920 Sinsheim, Germany

Filed Mar. 19, 1973, Ser. No. 342,436

Int. Cl.² B65G *13/02*

U.S. Cl. 198—127 R **19 Claims**



1. A stow roller train installation for storing and conveying cargo; said installation comprising:

support means;

at least one rotatable cargo supporting roller directly engageable with cargo to be stored and conveyed;

continuously movable traction means;

at least one rotatable intermediate roller interposed between said at least one cargo supporting roller and said traction means;

means for mounting said at least one rotatable cargo roller on said support means;

means operatively connected with each of said at least one intermediate rollers for adjustably mounting each of said intermediate rollers to be independently displaceable between a driving position with the intermediate roller drivingly connecting the traction means and one of said at least one cargo supporting rollers and an idling position with the intermediate roller and the traction means out of driving connection with one of said at least one cargo supporting roller;

said means for adjustably mounting each of said at least one intermediate rollers including control force means for providing a continuous individual adjusting control force on each of said at least one intermediate rollers in the direction of the driving position;

said means for adjustably mounting each of said at least one intermediate rollers includes means for axially fixing the axis of rotation of said intermediate rollers and for permitting movement in a radial direction with respect to said axis between said driving and idling positions;

said means for axially fixing the intermediate roller and permitting movement in the radial direction includes at least one first lever and means for disposing each of said intermediate rollers on a respective first lever;

said control force means including means provided on said support means for supporting said first lever so as to be

obliquely pivotable in a direction toward the driving position of the respective intermediate roller;

said means for disposing each of said at least one intermediate rollers is a second lever hingedly connected to a respective first lever, said second lever directly rotatably supporting a respective intermediate roller;

said control force means further includes abutments provided on said first and second levers which are engageable with one another to lift the respective intermediate roller away from engagement with the associated cargo supporting roller while maintaining engagement of said traction means and said intermediate roller.

3,939,963

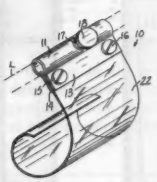
TYPE CORRECTION AID

John Barchilon, 556 Chapel St., New Haven, Conn. 06511

Filed Aug. 19, 1974, Ser. No. 498,275

Int. Cl.² B41J *29/00*

U.S. Cl. 197—187 **5 Claims**



1. An aid for positioning a paper in a typewriter which includes a line guide, a paper bar and a paper platen where the paper bar has bushings thereon which space the bar from the platen; said aid comprising a transparent strip of material having at least a portion thereof shaped on a radius of curvature less than the radius of curvature of the platen, means on said strip attachable to a paper bar so that said strip is rotatable and slidable on the paper bar, said strip extendible from a paper bar with the smaller radius portion over and about a platen behind a line guide.

3,939,964

APRON OR PLATE BELT CONVEYOR

Jannes Jonge Poerink, 25 Prins Bernardlaan, Borne, Netherlands

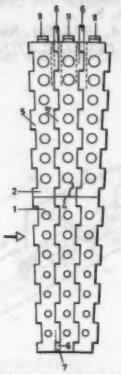
Filed Apr. 23, 1974, Ser. No. 463,644

Claims priority, application Germany, Apr. 26, 1973, 2321036

Int. Cl.² B65G *17/06*

U.S. Cl. 198—195 **4 Claims**

1. In a platform conveyor, the combination comprising two laterally adjacent, interconnected rows each having a plurality of flat panel members of plastic material hingedly connected together along transversely extending edges thereof, the upper surface of said flat panel members being adapted to support a load, a plurality of integrally formed eyes along each transversely extending edge of each of said panel members and being aligned to receive an interconnecting transverse bar member which connects both rows of said panel members together to form a conveyor belt, the eyes on one transversely extending edge of each panel being staggered relative to the eyes on the opposite edge thereof, said transverse bar member extending to a stop at one side of a panel member forming one edge of the conveyor belt, and at the other edge of the conveyor belt being retained by a pin inserted through a transverse aperture in said eye, and at least one hook attached to



one side of said panel members, which hook engages a web at the edge of the laterally adjacent member.

3,939,965

CONVEYOR BELT

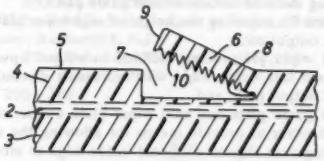
Karl-Günther Blattermann, Hamburg-Rahlstedt, and Günther Nolte, Mannheim, both of Germany, assignors to Conrad Scholtz AG, Hamburg, Germany

Filed Apr. 17, 1974, Ser. No. 461,808

Claims priority, application Germany, Apr. 17, 1973, 2319480

Int. Cl.² B65G *15/42*

U.S. Cl. 198—198 **11 Claims**



1. An endless conveyor belt of cords embedded in rubber or plastic for conveying articles up a steep incline, said belt comprising:

a substantially continuous smooth surface on one side adapted for engagement with guide rolls;

a load supporting surface on the other side having a plurality of recesses at spaced locations along the length thereof;

a plurality of article engaging flaps each resiliently attached at its trailing edge to the trailing end of one of said recesses and having an underside and being shaped to fit into said recess to pass over support rolls engaging the load supporting surface;

each said flap having a volume substantially filling the volume of its corresponding recess when disposed therein and being resiliently biased outwardly at a small acute angle with the load supporting surface of the belt whereby its leading edge normally extends above the load supporting belt surface at a loading zone for engagement with articles to be conveyed;

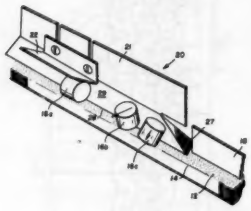
said flaps being made of a strip of rubber or plastic material and formed to bend due to loading with the leading edge moving rearwardly in a generally arcuate path to cause the underside of said flap to engage a large article being conveyed.

3,939,966

ORIENTER FOR SQUARE CYLINDERS

George Szenczy, Fayetteville, N.Y., assignor to Lipe Rollway Corporation, Syracuse, N.Y.

Filed June 24, 1974, Ser. No. 482,219
Int. Cl.[2] B65G 47/24
U.S. Cl. 198—240 12 Claims



1. In a vibratory feeder having an output path with an inside edge elevated above a lower input region, an orienter in the region of said output path for axially orienting uniform cylinders having a length-to-diameter ratio of substantially one, said orienter comprising:

a. a guide plate having a bottom edge in close proximity to said output path and substantially parallel with said inside edge of said output path, said guide plate extending upward from said output path;

b. means for adjusting the lateral distance between said bottom edge of said guide plate and said inside edge of said output path;

c. said guide plate having an obliquely upward facing surface inclined to extend upward and away from said inside edge with increasing distance above said output path;

d. a wiper plate mounted above said obliquely upward facing inclined surface of said guide plate;

e. means for adjusting the height of said wiper plate above said output path;

f. said wiper plate being inclined to extend upward and toward said inside edge with increasing distance above said output path; and

g. said guide plate and said wiper plate cooperating with each other to provide means for allowing the cylinders having axes aligned with said inside edge to move along said output path between said inside edge and said guide plate and underneath said wiper plate with a cylindrical side portion overhanging said obliquely upward facing inclined surface of said guide plate while the cylinders having axes transverse to said inside edge are forced over said inside edge by said bottom edge of said guide plate to fall to said lower region and are tilted by said obliquely upward facing inclined surface of said guide plate to tip over said inside edge to fall to said lower region and any of said transversely oriented cylinders reaching said wiper plate are tilted by said obliquely upward facing inclined surface of said guide plate so as to engage said wiper plate and are then tipped over said inside edge to fall to said lower region.

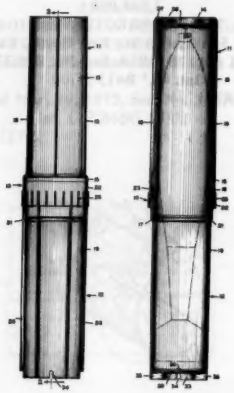
3,939,967

CONTAINERS FOR PROJECTILES

Kenneth S. Tenney, Winchester, Va., and Daniel Tomo, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 1, 1974, Ser. No. 494,259
Int. Cl.[2] F42B 37/02; B65D 11/22, 41/04
U.S. Cl. 206—3 5 Claims

1. A shipping and storage container for items of ordnance, said container comprising top and bottom mating portions each of which includes a substantially cylindrical wall portion having an open mouth at the inner extremity thereof and a closed end wall at the outer extremity thereof; said top portion having an integral outwardly projecting peripheral rib spaced from the lower open extremity thereof, the end surface of said peripheral rib providing an abutment shoulder, the outer peripheral surface of said top portion including an externally threaded portion located intermediate said peripheral rib and said open mouth, and the outer peripheral surface of said top portion having a plurality of uniformly spaced longitudinally disposed ribs extending from said peripheral rib to the upper extremity of said top portion; said bottom portion having an outwardly flared portion spaced from the upper open extremity thereof and an integral upper extremity of increased diameter complementary to that of the peripheral rib on said upper portion, the end surface of said extremity of increased diameter contacting said abutment shoulder when said top and bottom mating portions are in assembled relationship thus limiting the extent of entry of the bottom portion into said top portion, said extremity of increased diameter being interiorly threaded for the reception of said complementarily externally threaded portion, the peripheral surface of said upper portion of increased diameter having a plurality of uniformly and closely spaced ribs located intermediate said outwardly flared portion and said open mouth, and the outer peripheral surface of said bottom portion having a plurality of uniformly spaced longitudinally disposed ribs extending from said outwardly flared portion to the lower extremity of said bottom portion.



3,939,968

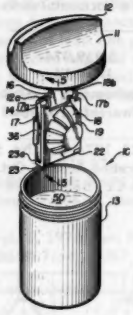
CONTACT LENS CAPSULE WITH INDICATING MEANS

Francis E. Ryder, Barrington, Ill., assignor to Ryder International Corporation, Barrington, Ill.

Filed Sept. 30, 1974, Ser. No. 510,639
Int. Cl.[2] A45C 11/00; G01K 11/00; G01D 21/00; B65D 85/38
U.S. Cl. 206—5.1 4 Claims

1. In the combination of a contact lens holder including a container body, a closure member for said container body and a central support member carried by said closure member and positionable within said container body, said central support member including means for receiving contact lenses to be sterilized by the subjecting thereof to a sterilizing temperature within said container body, said central support including a relatively rotatable transparent vessel, a quantity of eutectic material container within said vessel which material will be substantially solid at temperatures below said sterilization temperature and will become liquid at said sterilizing temperature or above, said quantity of eutectic material only partially filling said vessel, means rotatably mounting said vessel to said central support for rotative movement about a horizontally disposed axis, and means for releasably fixing the position of

said vessel relative to said horizontal axis, such that prior to sterilization, said vessel being positioned with the solid eutectic material in an elevated orientation, such that upon achieving the sterilizing temperature, said eutectic material will



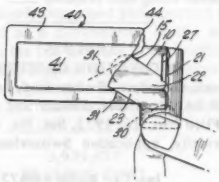
become liquid and will flow to the bottom of said vessel, thereby providing a visual indication as to the achievement of said sterilizing temperature, with said rotatable mounting enabling said vessel to be repositioned for subsequent sterilizing operations.

3,939,969

SUTURE PACKAGE

David C. Miller, Camillus, N.Y., and Clifton C. Sutton, Somerville, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed July 24, 1974, Ser. No. 491,200
Int. Cl.[2] A61L 17/02
U.S. Cl. 206—63.3 9 Claims



1. A suture package comprising (a) a sealed envelope and (b) an inner suture retainer intimately connected to said envelope and containing at least one suture, said sealed envelope comprising two panels sealed at the peripheral edges and adapted to be opened by a pulling force exerted on at least a portion of the envelope, said inner retainer comprising multiple panels, foldably connected to one another and folded together with the suture positioned and retained between said panels;

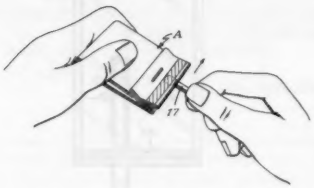
wherein the top retainer panel of said retainer has a terminal detachable section intimately connected to the envelope at a place near the end where a pulling force is to be exerted so that when the sealed envelope is opened by the pulling force, the pulling force exerts a simultaneous force on the top retainer panel bringing about a separation of said detachable section of said panel thereby exposing the suture end.

3,939,970

MATCH PACKAGES

Philip J. Schoenberger, 947 Bellows, West St. Paul, Minn. 55118

Filed Nov. 27, 1974, Ser. No. 527,642
Int. Cl.[2] A24F 27/12
U.S. Cl. 206—108 1 Claim



1. A match package including:

a back panel

a top panel foldably connected to said back panel,

a front panel foldably connected to said top panel,

a partial front panel connected to the lower edge of said back panel,

a similar partial front panel overlying said first named front panel,

a simulated match striking surface on said similar partial front panel,

a group of matches having base portions secured between said partial front panel and said back panel,

a match striking surface between said first named front panel and said similar front panel.

3,939,971

STERILANT PACKAGE ASSEMBLY

Jerry J. Tulis, Raleigh, N.C., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Filed Feb. 13, 1973, Ser. No. 332,215
Int. Cl.[2] B65D 31/12, 81/24
U.S. Cl. 206—205 12 Claims

1. A package for sterilizing implements comprised of two gas impermeable outer walls and an inner wall sandwiched therebetween thereby forming two compartments, said inner wall being pervious to sterilizing gas but impervious to water vapor.

3,939,972

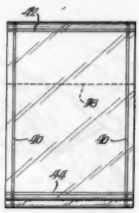
POUCH MADE OF COEXTRUDED POLYMERS

Robert G. Mayworm, Barrington, Ill., assignor to Tower Products, Inc., Mundelein, Ill.

Filed May 17, 1974, Ser. No. 470,966
Int. Cl.[2] B65D 25/08
U.S. Cl. 206—219 7 Claims

1. A pouch comprising a single tubular section of coextruded laminated film having free edges at opposite ends said tubular section comprising an inner laminate and an outer laminate surrounding the inner laminate said section being

flattened and overfolded medially along a line perpendicular to said free edges and defining a closed end in said pouch and a pair of superimposed walls each having two layers of said film, and means securing said walls together adjacent facing edges, said outer laminate constituting the innermost and outermost surface of each of said walls, the outer laminate



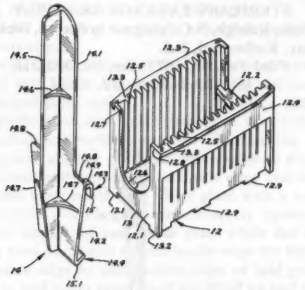
being a heat sealable polymer selected from the group consisting of low density ethylene homo- and copolymers, polyisobutylene modified polyethylene and mixtures thereof, said inner laminate being a polymer selected from the group consisting of ionomers, polyamides, pigmented polyethylene, medium and high density polyethylene.

3,939,973

WAFER BASKET AND EASILY ATTACHED AND DETACHED CARRIER FOR SAME

Victor C. Wallestad, Edina, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed Jan. 14, 1974, Ser. No. 433,121
Int. Cl.² B65D *25/28, 85/30*
U.S. Cl. 206—328 **12 Claims**



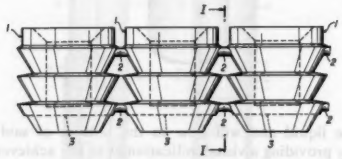
1. In combination, a wafer basket and an easily attachable and detachable carrier for the basket, the wafer basket having substantially vertical side and end walls and an open top and bottom, lower edges of at least two opposing walls having supports lying in a horizontal plane to support the basket on a horizontal surface, an end wall of the basket having upper and lower edges adjacent the top and bottom of the basket with the lower edge spaced above the horizontal plane; the carrier comprising a handle having at its lower end a plate configured to abut the end wall of the basket, the plate having a lower edge with an upwardly and inwardly projecting lip configured to hook beneath the lower edge of the end wall, the plate further having a hook spaced above its lower edge and configured to hook over the upper edge of the end wall, the depth of the hook permitting the upper edge of the end wall to move vertically within the hook while restraining horizontal escape of that edge from the hook, the hook and upwardly and inwardly projecting lip being vertically spaced to supportively retain between them the basket end wall when the lip is in contact with the lower edge of that end wall, but having a vertical inner dimension between the hook and lip greater than the vertical dimension between the upper and lower edges of the end wall and permitting the lip to escape outwardly of the lower end wall edge when the upper edge of the end wall is fully inserted within the hook to permit the carrier to be easily attached to and detached from the basket when the basket is resting on a horizontal surface.

3,939,974

DOWEL

Anton Holzer, Wien-Fischamend, Austria, assignor to Wien-Fischamender Metallwarenfabrik Josef Suschny & Sohne, Vienna, Austria

Filed Oct. 22, 1974, Ser. No. 517,060
Claims priority, application Austria, Oct. 25, 1973, 9051/73
Int. Cl.² B65D *85/24*
U.S. Cl. 206—343 **5 Claims**



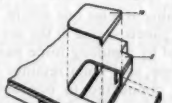
1. A plurality of dowels of synthetic material for use with a dowel driving apparatus of the type having a longitudinally extending magazine including dowel guiding means extending along the length of the magazine, each of said dowels having a head at one end thereof and a front face at the other end thereof and a body extending between said head and face, each said body having a substantially circular cross-section, each front face of each dowel having at least one recess extending across said body along a selected axis, said bodies of said dowels being connected by severable strap means to form an elongated strip with each said strap means extending parallel to said selected axis so that each said recess of each dowel will be alignable along said selected axis.

3,939,975

PROJECTION CASSETTE

Jean Thevenaz, Grandson, Switzerland, assignor to Bolex International SA, Ste. Croix, Switzerland

Filed Nov. 15, 1973, Ser. No. 415,932
Claims priority, application Switzerland, May 11, 1973, 6844/73
Int. Cl.² B65D *85/672*
U.S. Cl. 206—387 **3 Claims**



1. A cassette for storing alternatively at least two different kinds of information-bearing strips, the strip of a first kind having a single track of a first information type whereas the strip of a second kind has at least one additional information type coded thereon,

walls forming a cassette case to protect the strip contained, means for forming a loop of said strip within the cassette case,

a first information-handling zone on at least one of said walls for guiding said loop of strip to enable handling said first information type, the improvement comprising

wall portions defining a second information-handling zone on at least one of the walls within the range of said loop, said wall portions being connected to the remainder of the cassette case by at least one predetermined breaking point to facilitate removing said wall portions and forming an opening for handling said additional information types if a strip of said second kind is stored within the cassette.

3,939,976

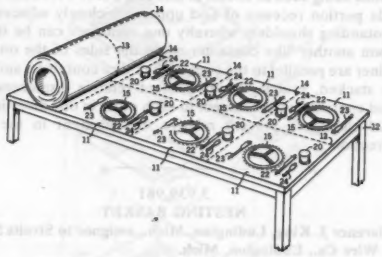
PREFABRICATED TABLE SETTING

Edmond J. VanIseghem, Jr., 96 W. Sherwood Drive, Overland, Mo. 63114

Filed Sept. 5, 1974, Ser. No. 503,304

Int. Cl.² B65D *1/34, 85/67;* **A45B** *13/08*

U.S. Cl. 206—390 **4 Claims**



1. Multiple prefabricated table place settings, comprising:

a. an elongate web of flexible material including a plurality of longitudinally disposed and integral place setting sections stored in a web roll prior to use, each section including a first relatively raised rim portion formed integrally with and as a continuation of the web, the rim portion defining a relatively depressed plate portion formed integrally with and as a continuation of the web, the web extending from the rim portions of the sections conforming flexibly to the support between the plate portions,

b. a plurality of eating utensils disposed on each section, and

c. means holding said utensils in place on each section.

3,939,977

SEALING RING

Macy J. Price, 44560 Country Lane, Northville, Mich. 48167, and Earl H. Pickett, 5902 Edinbrugh, Apt. 103, Plymouth, Mich. 48170

Filed July 24, 1974, Ser. No. 491,268

Int. Cl.² B65D *85/67*

U.S. Cl. 206—400 **9 Claims**

1. A sealing ring for use with a reel of the type including a central hub and spaced flanges, said ring comprising a molded unitary strip of homogeneous plastics material adapted to be formed into a loop to sealingly encircle said reel and including:

A. means defining a first end portion having a transverse, generally radially extending end surface and a smooth radially outer seating surface extending circumferentially away from said end surface;

B. means defining a second end portion adapted to be brought into overlapping relationship to said first end portion and having a smooth radially inner circumferentially extending seating surface adapted to seat on the smooth radially outer circumferentially extending seating surface of said first end portion;

C. means defining a transverse seating surface extending generally radially inwardly from said radially inner circumferentially extending surface at the end thereof remote from the free end of said second end portion;

D. means defining an aperture in one of said end portions within the smooth surface area of the circumferentially extending seating surface of that end portion; and

E. means defining a latching finger projecting radially from the smooth surface area of the circumferentially extending seating surface of the other end portion for latching coaction with said aperture to releasably latch said end portions together in lapping disposition with said radially inner and outer circumferentially extending seating surfaces in juxtaposition and the transverse end surface of said first end portion abuttingly urged against said transverse seating surface.

3,939,978

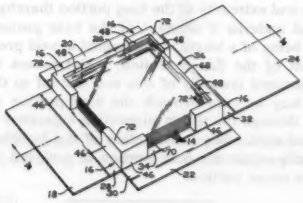
FLAT GLASS SHIPPING CONTAINER

Ronald J. Thomaswick, Kittanning, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 23, 1974, Ser. No. 490,837

Int. Cl.² B65D *65/02, 65/44, 81/04, 85/48*

U.S. Cl. 206—454 **13 Claims**



1. A container for shipping a stack of flat glass sheets having a generally rectangular shape wherein the width, length and height of the stack are of predetermined dimensions, comprising:

a corrigated fiberboard cut and scored to a generally T-shaped configuration to include a bottom portion, sides, a top lid flap portion, a bottom lid flap portion, a right side flap portion and a left side flap portion, said bottom portion having dimensions greater than corresponding dimensions of the stack of glass sheets and the width of said sides approximately equal to the height of the stack; and

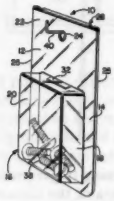
corner pad made of a resilient, compressible, shock-absorbing material positioned at the corners of said base and having a height in the uncompressed state greater than

the width of said sides, and a thickness approximately equal to the difference between the corresponding dimension of the stack and of said base, said corner pads being compressed between said corresponding side flap portion and bottom portion when the container is formed from said fiberboard to unitize the stack of glass sheets.

3,939,979
DISPLAY CONTAINER

George Anton Neumayer, Deerfield, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 21, 1975, Ser. No. 561,023
Int. Cl.² B65D *73/00*
U.S. Cl. 206—461 **7 Claims**



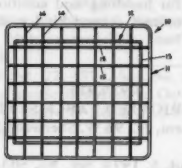
1. A display container adapted to hang from a rack, including a cover portion with a bubble section having upstanding wall sections and a top wall section, a flange section at least partially surrounding the bubble section, a portion of said flange section extending for a predetermined distance in a given direction from the wall sections, a generally rectangular base portion slidably associated with and beneath the cover portion and having perimetrical dimensions substantially identical to the perimetrical dimensions of the cover portion, the surrounding flange section of the cover portion including reversely bent portions providing spaced opposing marginal surface areas adjacent opposing side edges of the cover and one end edge facilitating the sliding association and retention of the base portion beneath the cover portion, a pivotable flap element and tab element connected in seriatim and integral with one end extremity of the base portion thereby adapted to bend and underlie a segment of the base portion, the flap element being of a length at least equal to said predetermined dimension of the flange section, a slot means in the base portion located inwardly of one end thereof so that the flap portion may be bent beneath the base portion and the tab inserted through the slot in supporting adjacency to an inner peripheral upstanding wall section of the bubble section to temporarily retain the base portion in a closed position beneath the cover portion.

3,939,980
NESTING CONTAINER

Clarence J. King, Ludington, Mich., assignor to Straits Steel & Wire Co., Ludington, Mich.

Filed July 10, 1974, Ser. No. 487,001
Int. Cl.² B65D *7/20, 21/04*
U.S. Cl. 206—507 **3 Claims**

1. A stackable-nestable container for storage and transport of articles, said container having an upper rim and a lower rim, a bottom formed of a grid of interconnected, intersecting wires, both ends of said wires of said grid being bent to extend upwardly to form the ends and sides of said container, the tops of said upstanding wires being rigidly secured to said upper rim, said lower rim being rigidly secured to said grid, said container characterized in that the side portions of said upper rim are provided with recesses, said recesses adjacent the ends of said container terminating in an upstanding shoulder, one adjacent each end of said container; said lower rim being ring-shaped and secured to the underside of the bottom of said container, the ends of said lower rim extending downwardly to form a pair of spaced leg-hooks and the sides of said rim being nested firmly against and secured to said bottom, said legs of an upper container resting on the bottom of a lower container when the containers are nested whereby the load of the upper of said containers when nested is supported entirely by its legs and the bottom of the container beneath; the spacing between said leg-hooks being such as to receive the side portions of the

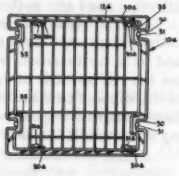


top rim therebetween and the horizontal length of said side hooks being such as to seat in said side portion recesses of said side portion recesses of said upper rim closely adjacent said upstanding shoulders whereby one container can be stacked upon another like container when the sides of the one container are parallel to the ends of the other container, and when so stacked, said leg-hooks prevent relative displacement of said containers with respect to each other in one direction and said shoulders prevent relative displacement in the other direction.

3,939,981
NESTING BASKET

Clarence J. King, Ludington, Mich., assignor to Straits Steel & Wire Co., Ludington, Mich.

Filed July 10, 1974, Ser. No. 487,048
Int. Cl.² B65D *7/20, 21/04*
U.S. Cl. 206—507 **1 Claim**



1. A nestable-stackable container for the transport and storage of articles, said container having spaced endless upper and lower rim elements, said lower rim element enclosing a smaller area than said upper rim element, first and second spaced members arranged in an intersecting pattern to form a grid, said grid forming the bottom thereof and being secured to said lower rim element, first upstanding spaced members forming the sides of said container and second upstanding spaced members forming the ends of said container, said container characterized in that said upper and lower rim elements at each of their ends have a pair of inwardly offset portions, said inwardly offset portions on opposite ends being spaced equally from both sides of said container; the sides of said upper and lower rim elements being straight; the spacing between the sides of said lower rim element whereby the lower rim element of an upper container will rest upon the inner ends of the offset portions of the upper rim element of a lower container when one container is rotated 90° with respect to and stacked upon the other thereof; the exteriorly facing

opening formed by each of the offset portions in said lower rim being of a size to permit the offset portion in the upper rim to pass vertically therethrough when the containers are nested; upstanding stops on the top of said offset portions of said upper rim element, said stops being so spaced as to engage the inner face of the lower rim element of the upper of the stacked containers; the vertical height of said stops being no greater than the vertical thickness of said bottom whereby no portion of said stops will project into the interior of the upper of the containers when said containers are stacked and the stops of the container beneath support the container above by contact with the lower face of the upper rim of the upper of the containers when said containers are nested.

3,939,982

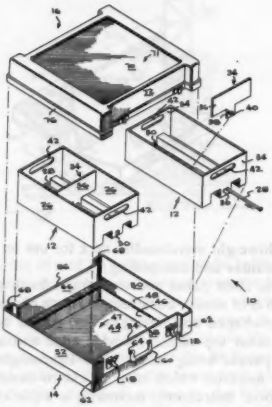
DOCUMENT TRANSPORTATION CASE

Carroll E. Russell, Rte. 5, Box 508, Wetumpka, Ala. 36092

Filed Mar. 20, 1975, Ser. No. 560,516

Int. Cl.² B65D *51/18, 1/34, 21/02, 85/54*

U.S. Cl. 206—509 **10 Claims**



1. A document transportation case for carrying and storing computer data cards, computer printouts and the like, said case comprising at least one elongated tray in which the computer cards may be carried, a case container of open-topped box configuration to receive the tray, said case container having a bottom surface with a printout storage recess projecting outwardly from said bottom surface, a support surface on the inside of the case container adjacent the printout-storage recess to support the card tray above the printout-storage recess when the tray is placed in the case container, a case cover of open-topped box configuration having a top surface and an inwardly directed recess in said top surface which is complementary to said printout-storage recess in the case container, thereby permitting transportation cases to be stacked with the recesses of adjacent cases interlocking to prevent any sliding between adjacent cases, and locking means for retaining the case cover on the case container.

3,939,983

APPARATUS FOR SORTING TOBACCO LEAVES

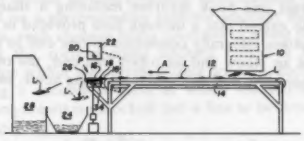
Emil S. Asfour, 21 Wengirain, 8704 Herrliberg, Switzerland

Continuation of Ser. No. 235,169, March 16, 1972, abandoned. This application Sept. 20, 1974, Ser. No. 507,699

Int. Cl. B07c *5/342*

U.S. Cl. 209—73 **29 Claims**

1. Apparatus for sorting tobacco leaves, comprising a conveyor for moving leaves, an end plate comprising a substantially horizontally disposed surface over which said leaves pass, said plate being arranged in cooperation with the forward end of said conveyor to receive said moving leaves therefrom, means for resiliently mounting said end plate to be movable away from said conveyor on accumulation of leaves between said conveyor and said end plate, said end plate being



adapted to provide a preselected level of light reflection, a photoelectric sensor spaced above said end plate adapted to provide a signal indicative of the reflection of light from the leaves passing over said end plate and means responsive to said signal to classify said leaves.

3,939,984

PACKAGE INSPECTION AND HANDLING SYSTEM

Dean C. Butner, Rte. 1, Clemmons, N.C. 27012, and Douglas C. Clark, Rte. 8, 5120 Angelia Drive, Winston-Salem, N.C. 27106

Filed Dec. 20, 1974, Ser. No. 534,939

Int. Cl.² B07C *5/02*

U.S. Cl. 209—74 M **28 Claims**

1. An accumulator for use on an inter-connecting conveyor between a packaging machine and a cartoning machine comprising:

a. a frame;

b. a magazine mounted for movement on said frame for receiving and storing packages from said conveyor, said conveyor passing through said magazine; and

c. means for varying the position of said magazine with respect to said conveyor so that packages can be selectively removed from and deposited on said conveyor.

3,939,985

HOOK DISPLAY ASSEMBLY

Arthur Hochman, Union City, N.J., assignor to Art-Phyl Creations, Newark, N.J.

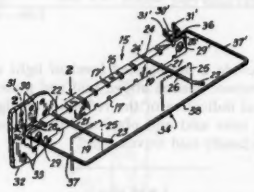
Filed June 18, 1974, Ser. No. 480,344

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—57 **5 Claims**

1. An improved hook display assembly for displaying carded items for sale which comprises a rack, said rack having a substantially rectangular cross-section and respective plurali-

ties of aligned undercut and overcut notches and a through hole provided in each overcut notch extending widthwise through said rack into an aligned undercut notch, at least one hook member releasably connected at one end thereof to said rack and having another free end, said at least one hook member being arranged perpendicularly relative to said rack, said at least one hook member including a shank portion adapted to extend into a through hole provided in said rack, a stem portion integrally connected at one end to said shank portion at an elbow and an offset free end, the offset angle between said free end and said stem being acute, and a safety



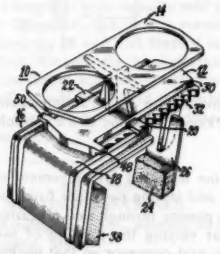
bumper guard releasably connected to said rack and extending beyond said free end of said at least one hook member so as to prevent an inadvertent encounter with said at least one hook member of said display, said bumper guard being releasably connected to said rack and comprising a pair of shank portions engageable in respective through holes provided in remote notches of said rack, a pair of opposed outwardly turned shoulders arranged to overlie respective opposite end portions of said rack and extending respectively therebeyond, a pair of inwardly turned substantially parallel arms issuing from said respective shoulders and a cross member connected at each end thereof to a respective arm.

3,939,986

ADJUSTABLE SUPPORT MEANS

Joseph W. Pierro, 119 Unkament Drive, Pittsfield, Mass. 01201

Filed Nov. 4, 1974, Ser. No. 520,540
Int. Cl.² A47B 73/00, 23/00
U.S. Cl. 211—74 5 Claims



1. An adjustable support means for supporting a tray-like device on a portion of upholstered furniture comprising:

a. a first member including a tray-like device,

1. an arm portion of said first member having sides, one of said sides having a plurality of teeth formed therein and the other of said sides being beveled,

b. a second member movable into locking engagement with said first member,

1. said second member having a pair of slot-like extensions for sliding engagement with said sides of said first member,

a. one of said slot-like extensions having a cam means coacting with said beveled side of said first member,

b. the other of said slot-like extensions having at least one projection coacting with said teeth on said first member,

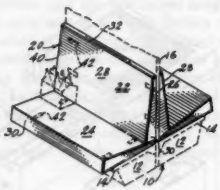
whereby as said second member engages said first member said cam means coacts with said beveled side to move said teeth into locking engagement with said at least one projection.

3,939,987

SOLID PLASTIC FOAM MERCHANDISE SUPPORT

Rafael T. Bustos, Atlanta, and Ladd M. Orr, Clarkston, both of Ga., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Continuation of Ser. No. 217,056, Jan. 11, 1972, abandoned. This application May 13, 1974, Ser. No. 469,741
Int. Cl.² A47F 7/00
U.S. Cl. 211—134 3 Claims



1. A lightweight merchandise rack for use on an underlying support counter and comprising,

a bottom shelf panel and an upright back panel, each of which is of similar construction, each of said panels being wedge-shaped and having a flat, planar back surface, a flat planar top surface, a wide edge and a narrow edge, said panels being made from lightweight solid plastic foam material which may be cut to desired size with a common instrument, including a knife or an ordinary hand saw to accommodate the panel size to the underlying support counter,

said bottom panel having its back surface located in a generally horizontal plane and its wide edge facing to the front of said rack so that the top surface of said bottom panel extends downwardly from the front edge toward the rear of said shelf panel,

said upright panel having its back surface located in a generally vertical plane and its wide edge resting atop the rear portion of said top surface of said bottom panel such that the included angle between the top surface of said shelf panel and said top surface of said upright panel is approximately a right angle, and the included angle between said back surface of said shelf panel and said back surface of said upright panel is also approximately a right angle.

3,939,988

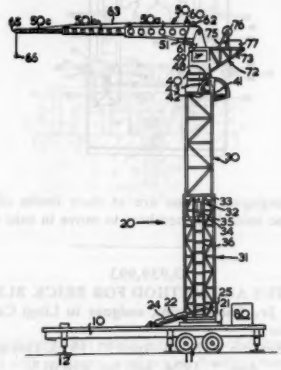
TOWER CRANE

Donald E. Wellman, Komoka, Canada, assignor to General Crane Industries Limited, London, Canada

Division of Ser. No. 144,199, May 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 818,751, April 23, 1969, abandoned. This application Aug. 21, 1974, Ser. No. 499,418
Claims priority, application Canada, Apr. 9, 1969, 48201
Int. Cl.² B66C 23/62
U.S. Cl. 212—46 A 4 Claims

1. A mobile tower crane comprising mobile platform means, a tower pivotally mounted at its base on said platform means for tilting movement between a vertical operating position and a substantially horizontal travelling position, raising means

interconnecting said tower and said platform means for moving the tower between said positions, jib support means mounted at the top of the tower and including at least a part rotatable about a vertical axis when the tower is vertical, pivot means connecting said jib to said tower, said pivot means including a jib pivot connecting said jib to said jib support means to allow luffing movement of said jib, and jib luffing hydraulic cylinder means connected at one end to said jib and operative to cause said luffing movement of said jib, and wherein there is provided jib alignment means operatively connected between the jib support means and the jib movable to alter the relative disposition of said tower, the jib pivot and an end of the jib luffing hydraulic cylinder means in such manner as to alter the angle between the jib and the tower axis



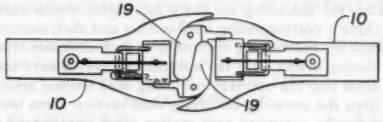
without operation of said jib luffing hydraulic cylinder means, the jib alignment means being arranged to move between an operating position and a folded position, in which operating position the jib luffing hydraulic cylinder means is capable of luffing the jib between a raised position above the top of the tower and a lowered position in which the jib forms a substantial angle of the order of 90° with the tower axis, and in which movement of the jib alignment means to the folded position causes angular movement of the jib through a folding angle roughly equivalent to said substantial angle, whereby the jib can be moved to a folded position in alignment with the tower by combined operation of said jib alignment means and said jib luffing cylinder means, and wherein said pivot means are so arranged that the jib lies close to the tower when in said aligned position.

3,939,989

COUPLING APPARATUS

William H. Thomson, Nice, Calif., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Dec. 13, 1974, Ser. No. 532,371
Int. Cl.² B61G *1/00*
U.S. Cl. 213—75 TC **4 Claims**



1. Coupling apparatus comprising:

first and second horizontally elongated members having adjacent ends which can be moved toward or away from each other into or out of coupling position, said ends having curved openings;

first and second latching means, each latching means being pivotally secured to an adjacent end of a corresponding member, each latching means being disposed in the curved opening of its member and engaging the other latching means when the members are coupled, said latching means being disposed outside of the curved openings when the members are uncoupled;

first and second locking elements, each element being disposed on a corresponding member adjacent the latching means, each element being normally in a first position at which the corresponding latching means is locked in position within the corresponding opening, each element having a second position at which the corresponding latching means is unlocked and is free to be moved out of the opening; and

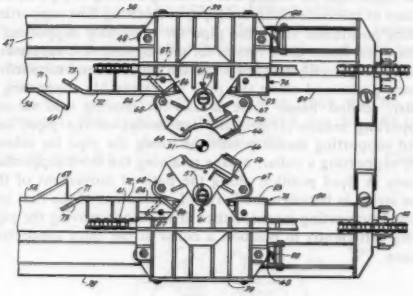
first and second tiltable control levers having positions extending downward through openings in the members, said levers when inclined in either direction causing said elements to be placed in the second position whereby the members can be moved out of coupling position and the elements returned to the first position, each lever having means cooperating with the corresponding element to produce the desired action.

3,939,990

AUTOMATIC ROUGHNECK

Charles R. Johnson, San Pedro, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Filed June 13, 1974, Ser. No. 478,930
Int. Cl.² E21B *19/14*
U.S. Cl. 214—1 P **17 Claims**



1. An apparatus for handling the lower end of a pipe during a portion of its travel between a horizontal storage position and a vertical use position comprising:

a pair of opposed jaws;

means for traversing the jaws in a generally horizontal direction between a center line position wherein a pipe is vertical for use and a lateral position wherein a pipe is tilted for transportation to or from storage the means for traversing including a pair of parallel tracks,

means for mounting one of the jaws on each track, and

means for traversing the jaws along the respective tracks in synchronism with each other;

means for opening the jaws into a generally U-shaped opening facing towards the lateral position for receiving a pipe in the opening and constraining it from uncontrolled lateral movement towards the center line position;

means for closing the jaws into a generally O-shaped opening adjacent the center line position for holding the pipe; and

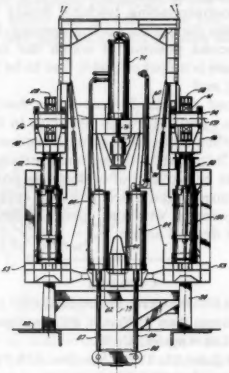
means for opening the jaws into a generally U-shaped opening facing away from the lateral position adjacent the center line position for clearing a pipe located in the center line position.

3,939,991

PARKING BRAKE FOR SUBSEA MINING LIFT SYSTEM

Abraham Person, Los Alamitos, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Filed June 13, 1974, Ser. No. 478,932
Int. Cl.[2] E21B 19/14
U.S. Cl. 214—1 P 6 Claims



1. Apparatus for raising and lowering a string of pipe having collars at intervals along the pipe, comprising first supporting means positioned along the pipe for releasably supporting a collar, first linear drive means for moving said first supporting means reciprocally lengthwise of the pipe, second supporting means positioned along the pipe for releasably supporting a collar, second linear drive means for moving said second supporting means reciprocally lengthwise of the pipe, and third supporting means positioned along the pipe for releasably supporting a collar, means retaining the third supporting means in fixed position along the path of movement of the pipe string in between the limits of movement of the first and second supporting means, either drive means moving the pipe string sufficiently to position a collar at the third supporting means.

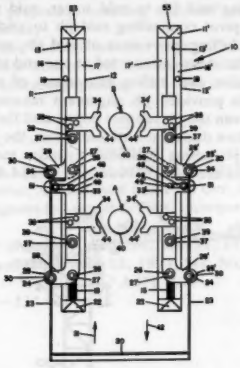
3,939,992

WORKPIECE TRANSFER MECHANISM

Richard A. Mikulec, 325 Sherbrooke Ave., Amherst, N.Y. 14221

Filed Sept. 26, 1974, Ser. No. 509,327
Int. Cl.[2] B65G 25/04
U.S. Cl. 214—1 BB 8 Claims

1. A workpiece transfer mechanism comprising base means, first and second spaced parallel ways on said base means, first and second slide members slidable in a longitudinal direction in said first and second ways, respectively, means for maintaining a predetermined frictional engagement force between said slide members and said ways, said frictional engagement force being overcomeable by a first force, first and second workpiece engaging means, first and second mounting means movably mounting said first and second workpiece engaging means on said first and second slide members, respectively, said first and second mounting means being moveable on said side members in response to a second force which is less than said first force, and actuating means coupled to said mounting means for transmitting said second force thereto to cause said mounting means to carry said workpiece engaging means to and from its limits of travel between a workpiece engaging position and a totally open position while said slide members remain stationary in said ways because said second force is less than said first force, said first force being transmitted to said slide members through said mounting means when said



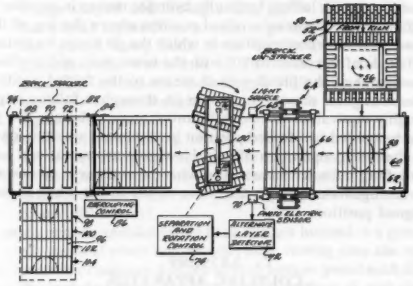
workpiece engaging means are at their limits of travel to thereby cause said slide members to move in said ways.

3,939,993

APPARATUS AND METHOD FOR BRICK BLENDING

Hans Lingl, Jr., Paris, Tenn., assignor to Lingl Corporation, Paris, Tenn.

Division of Ser. No. 352,033, April 17, 1973. This application Aug. 7, 1974, Ser. No. 496,013
Int. Cl.[2] B65G 57/22
U.S. Cl. 214—6 A 12 Claims



1. Apparatus for blending a layered stack of bricks having a central core section of lesser hardness and lighter color than in the surrounding outer shell section, said apparatus comprising:

means for unloading the stack into layers which each include a corresponding core section and shell section,

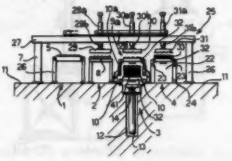
means for rearranging the bricks in each alternate layer by placing bricks from the normally occurring core section areas into the normally occurring shell section areas and from the normally occurring shell section areas into the normally occurring core section areas, said means comprising means for gripping the bricks in a first half as a first group, means for gripping the bricks in the remaining half as a second group, and means for moving the gripped first and second halves relative to one another to reverse their respective relative positions, and

means for restacking all the layers into a blended stack.

3,939,994
STACKING APPARATUS

Gianoberto Suzzi, Modena, Italy, assignor to Riva Calzoni S.p.A., Milan, Italy

Filed Jan. 22, 1975, Ser. No. 543,109
Claims priority, application Italy, Jan. 23, 1974, 67177/74
Int. Cl.² B65G 57/04
U.S. Cl. 214—6 M 4 Claims



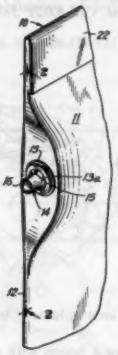
1. An apparatus for stacking sheets of asbestos cement interleaved with patterns, comprising feeding means for feeding fresh asbestos cement sheets, first and second flanking guideways for guiding respectively pattern-carrying trolleys and trolleys carrying mixed stacks of sheets interleaved with patterns, a bridge structure arranged above said guideways and said feeding means, a carriage displaceably mounted on the said bridge structure and provided with respective suction boxes for picking up, transporting and depositing the said sheets and the patterns, a trolley elevator in the area where the stacks of interleaved sheets and patterns are formed, wherein the improvement consists in the provision at the station where the mixed stack of sheets and patterns is formed on the respective trolley, under the bridge structure, of a section of auxiliary guideway, disposed above the second guideway for the mixed stack-carrying trolley, at a higher level than the maximum height attainable by the top of the mixed stack when said trolley is on said second guideway, a transfer mechanism for transferring said trolleys from the first guideway to the auxiliary guideway, and means for disengaging the section of auxiliary guideway from the trolley when the latter is engaged by the said elevator such that said elevator lowers the trolley onto the second guideway.

3,939,995
VALVE PLACEMENT IN A MULTI-PLY, INFLATABLE BAG

Robert Olin Baxter, Camden, Ark., assignor to International Paper Company, New York, N.Y.

Filed Nov. 1, 1974, Ser. No. 519,814
Int. Cl.² B60P 7/14
U.S. Cl. 214—10.5 D 5 Claims

1. In a multi-ply, inflatable bag, which includes an inner, inflatable bladder; an outer, protective shell, enclosing the bladder and having a fold line defining a fold in an edge thereof; a valve connected to the bladder and extending outwardly of the bladder and the shell; and a rigid grommet; the valve being located in the eyelet of the grommet; the improvement which comprises: the grommet being secured to the shell about the fold in an edge of the shell, whereby the edge of the shell is indented in the area of the grommet and the area of the

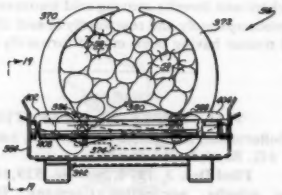


indent in the shell being substantially greater than the shell contact area of the grommet.

3,939,996
TREE HARVESTING APPARATUS

Theodore B. Golob; Sylvester J. Hauck; Stanley C. Jasinski; Bruce A. Margerum, all of Ontario, Canada, and Antti Jarvi, Niittykumpu, Finland, assignors to Eaton Yale Ltd., Ontario, Canada

Division of Ser. No. 888,746, Dec. 29, 1969, Pat. No. 3,796,241. This application July 30, 1973, Ser. No. 384,147
Int. Cl.² B60P 3/00
U.S. Cl. 214—82 4 Claims



1. Apparatus for use in association with a vehicle for harvesting and transporting trees, said apparatus comprising a clamp assembly comprising a pair of arms adapted to be mounted on the vehicle for gripping logs to be transported, said pair of arms being operable between a closed condition in which the logs are held against a lower portion of said clamp assembly to retard relative movement between the logs and the vehicle while the logs are being transported and an open condition in which the logs are released, and a roller mounted on the frame of said clamp assembly and movable upwardly against the logs for raising the logs off said lower portion of said clamp assembly in response to operation of said arms from said closed condition to said open condition to thereby facilitate disengaging the logs from said clamp assembly.

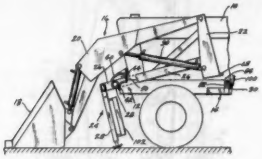
3,939,997
TRACTOR MOUNTED IMPLEMENT DEVICE

Eldon M. Frank, Lake View, Iowa, assignor to F & W Company Inc., Lake View, Iowa

Continuation-in-part of Ser. No. 260,465, June 7, 1972, Pat. No. 3,863,786. This application Feb. 3, 1975, Ser. No. 546,433

Int. Cl.² E02F *3/72*

U.S. Cl. 214—131 A **11 Claims**



3. In combination, an implement mountable on a tractor, comprising,

an implement having a boom with a ground engaging tool on the outer end and pivotably mounted to upright standards at its inner end carried on a U-shaped frame and power means extendably interconnects said U-shaped frame and boom for relative pivotal movement therebetween, said U-shaped frame having a transversely extending member and a stand connected thereto for cooperation with said tool for supporting said implement independently of said tractor,

a tractor having oppositely disposed rear side support brackets for engagement with said standards, and

a downwardly and forwardly opening guide support channel on said tractor for receiving said transversely extending member whereby upon said transversely extending member being positioned in open end of said channel and said power means being operated to pivot said U-shaped frame and said boom towards each other said U-shaped frame pivots about an axis through said channel until said standards engage said support brackets whereupon continued operation of said power means causes said U-shaped frame to pivot about an axis through said support brackets and thereby moving said transversely extending member upwardly and rearwardly in said channel without said tractor having been moved forwardly.

3,939,998
VIALS EMPTYING APPARATUS

Walter Soltermann, Birsfelden, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 3, 1974, Ser. No. 529,106

Claims priority, application Germany, Dec. 3, 1973, 2360201

Int. Cl.³ B65G *65/40;* **B65B** *69/00*

U.S. Cl. 214—302 **9 Claims**

1. Apparatus for emptying disposable receptacles, comprising:

a. severing means adapted to sever receptacles into two cup-like parts;

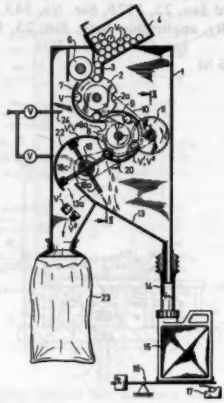
b. conveying means for conveying receptacles past said severing means to be severed;

c. a rotating spider which has tubular arms for supporting cup-like parts from the conveyor and which is rotatable about a substantially horizontal axis, the arms being adapted to be connected to a pressure gas source at least during part of each rotation;

d. means to turn the two parts of each receptacle in the conveying means so that the severed apertures of such parts face towards the spider;

e. means for locating each of the receptacle parts thus turned on to a rising spider arm;

f. means for collecting liquid poured out of the receptacles;



and

g. separate means for collecting cup-like parts.

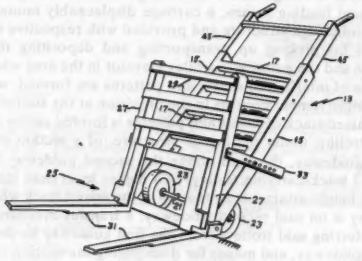
3,939,999
FORKLIFT HAND TRUCK

Edsel J. Nielson, Woods Cross, Utah, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 20, 1974, Ser. No. 525,595

Int. Cl.² B62B *1/06*

U.S. Cl. 214—370 **1 Claim**



1. In a tiltable hand truck having a main frame which includes side rails and handles at the rearward end thereof and carrying wheels with axle therefor at the forward ends, the improvement comprising extensions fitted into said side rails for extending the length thereof, the handles being attached to the rearward end of said extensions, a series of angular slots on the inner walls of said side rails, a corresponding series of counter weights insertable in said slots for counter balancing the work load, a V-shaped brace attached to said side rails and extending downwardly therefrom, a reach member extending rearward from said axle to said brace, a swivel wheel assembly attached to the lowermost portion of said brace for rolling contact with the ground surface, an angularly adjustable load support including a mast pivotally attached to the side rails at the forward end of said main frame and extending upwardly therefrom, a pair of adjustable mast supports pivotally attached between the sides of said mast and the side rails of the main frame, and a pair of forks extending outwardly from the lower end of said mast for insertion under a workload whereby the angle of said load support relative to the hand truck can

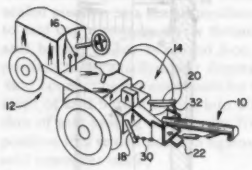
be varied to obtain the maximum work advantage depending on the size, shape and weight of the workload.

3,940,000

UNIVERSAL HYDRAULIC LIFT ATTACHMENT FOR TRACTORS

C. K. Mousel, Arapahoe, Nebr. 68922

Filed May 16, 1974, Ser. No. 470,588
Int. Cl.² E02F *3/62*
U.S. Cl. 214—766 **7 Claims**



1. A hydraulic lift assembly attachable to a tractor having a draw bar, a hitch with vertically pivotable arms, and a hydraulic system for operating the arms and connectable hydraulic attachments, said lift assembly comprising:
a frame mountable on and attachable to the draw bar;
means for mounting said frame to the draw bar;
two elongated connecting means, each connecting means connected at a first end to said frame and connectable at the other end to a corresponding arm of the hitch, said lift assembly removably mounted on and primarily supported by said draw bar and additionally supported and stabilized by the lift arms through said connecting means;
a boom pivotably mounted to said frame and extending outwardly therefrom;
and hydraulic piston means for raising and lowering said boom, said hydraulic piston means mounted at one end to said frame and mounted at the other end to said boom and connectable to the hydraulic system of the tractor.

3,940,001

RECYCLABLE PLASTIC CONTAINERS

Albert J. Haefner, and Michael E. Kucsma, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 295,515, Oct. 6, 1972, abandoned. This application May 6, 1974, Ser. No. 467,144
Int. Cl.² B65D *23/02*, *25/14*
U.S. Cl. 215—1 C **40 Claims**

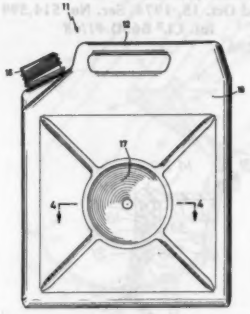
1. A rigid narrow-necked plastic bottle having laminated walls, the laminated walls comprising:
a. a fluid-barrier lamina of a flexible non-frangible material which is highly impermeable to fluids, and
b. a load-bearing lamina of a frangible plastic material which will delaminate from said fluid barrier lamina when said bottle is crushed.

3,940,002

PLASTIC JERRY CAN

Wolfram Schiemann, Eugen-Nagele-Strasse, 714 Ludwigsburg, Germany

Division of Ser. No. 347,572, April 3, 1973. This application Dec. 6, 1974, Ser. No. 530,155
Claims priority, application Germany, Apr. 6, 1972, 2216524
Int. Cl.² B65D *1/18*
U.S. Cl. 215—1 C **14 Claims**



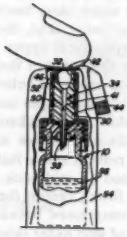
1. A plastic jerry can comprising an outside wall which consists of a surface-stabilized low-warpage material of sufficiently high diffusion density and sufficiently low surface, skin effect resistance, which material is injected in the form of shells forming a portion of the shape of said jerry can, and
a contiguous blow molded plastic wall sealed onto and around the interior surface of the shells.

3,940,003

SAFETY CAP FOR MEDICAMENT VIAL HAVING PUNCTURABLE SEAL

Roger R. Larson, Champaign, Ill., assignor to Pharmaco, Inc., Champaign, Ill.

Filed May 7, 1974, Ser. No. 467,802
Int. Cl.² B65D *41/20*, *51/22*; A61J *1/08*
U.S. Cl. 215—247 **6 Claims**



1. For use in connection with a container having a puncturable seal, a closure cap for support from said container in position with a mounting portion of said cap disposed outwardly of said seal, a tubular needle structure having one pointed end supported from said mounting portion for movement toward and away from the outer side of said seal between a first position with said one pointed end retracted away from said seal and a second position with said one pointed end projected through the seal, said mounting portion of said cap and said needle structure including coacting means progressively and increasingly yieldingly resisting movement of said needle structure from said first position to a third position intermediate said first and second positions with said pointed

end at least initially engaged with said seal and then releasing said needle structure for free movement from said third position to said second position.

3,940,004

WIDEMOUTH JAR NECK AND PLASTIC CAP CONSTRUCTION

George W. Faulstich, San Carlos, Calif., assignor to Three Sisters Ranch Enterprises, San Carlos, Calif.

Filed Oct. 15, 1974, Ser. No. 514,599
Int. Cl.[2] B65D *41/48*
U.S. Cl. 215—256 4 Claims

1. In combination, a thin-walled container neck, said neck formed with a cylindrical upper end having an inwardly-turned top flange, an inwardly-turned upper neck bead below said upper end, said upper neck bead comprising a downwardly-inwardly slanted shoulder, the inside diameters of said flange and of said upper neck bead being approximately the same, a conical outwardly-downwardly first slanted portion below said shoulder of said upper neck bead, a lower inwardly-turned neck bead below said first slanted portion, an outwardly-downwarddly second slanted portion below said lower neck bead, and an external bead below said second slanted portion; and a deformable, flexible plastic cap, said cap having a top disc having a short, depending inner skirt and a peripheral outer skirt, said outer skirt having a cylindrical upper portion parallel to said inner skirt, the spacing between said inner skirt and said cylindrical upper portion being substantially greater than the thickness of the wall of said container neck, an upper internal cap bead below said upper portion, a weakening groove below said upper internal bead and a lower internal cap bead below said weakening groove, said outer skirt being flared outwardly below said lower internal cap bead so that said cap rests in stable fashion on said neck prior to said cap being seated on said neck;

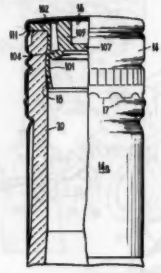
the top of said flange fitting against the underside of said disc, said flange being compressed between said inner skirt and said upper portion of said outer skirt, said upper neck bead being in sealing engagement with the outside of said inner skirt, said upper cap bead fitting in sealing engagement against said first slanted portion, said lower cap bead locking in said lower neck bead, the lower edge of said outer skirt fitting tightly against the outside of said second slanted portion of said neck and also fitting tightly against the top of said external bead of said neck so that said cap cannot be pulled off said neck by prying the lower edge of said cap upward with the fingers, the outer lower edge of said inner skirt being tapered and the bottom surfaces of both said upper and lower internal cap beads being slanted downwardly-outwardly so that downward pressure on said cap when said cap is resting on top of said neck seats said cap on said neck.

3,940,005

SAFETY CLOSURE MEANS FOR PRESSURIZED BOTTLES AND OTHER LIKE CONTAINERS

Rodney John Granat, Caulfield, Australia, assignor to A.C.I. Operations Pty. Limited, Melbourne, Australia

Filed Apr. 11, 1974, Ser. No. 460,199
Int. Cl.[2] B65D *41/60*
U.S. Cl. 215—325 13 Claims



1. A resealable safety closure which can be applied by conventional high speed capping equipment to annular openings in necked containers,

said closure comprising

metal capsule means having a crown and a skirt depending thereform, said capsule means adapted to enclose at least a portion of the neck of said container and being convertible into a removably secured cap means by the in situ formation of screw threads thereon by a rolling operation while said capsule means is fitted on said neck, and

self-releasing plug means at least partly enclosed by and retained by said capsule means so that same may be simultaneously applied to and removed from said container,

said plug means comprising

tubular member means readily insertable into the container opening,

flange means near one end of said tubular member means and retained by the interior of said capsule means in axially slidable relationship thereto, said flange means adapted to seat upon the area of the container adjacently surrounding the opening when said tubular member means is disposed within the opening to limit movement of the tubular member means into the opening,

said tubular member means including

transversely expandable annular sealing area means located along said tubular member means an axial distance below said flange means sufficient to avoid substantial restriction by said flange means of transverse expansion of said sealing area means,

button member means located radially centrally of said tubular member means and engageable with the interior crown of said capsule means,

connecting means connecting said button means to said sealing area means wherein axial movement of said button means is translated by said connecting means to transverse movement of said sealing area means, said sealing area means capable of variation of expansion, for a predetermined axial movement of said button means, with the diameter of the opening of the container to effectively seal a relatively wide range of diameters of contents

said connecting means including

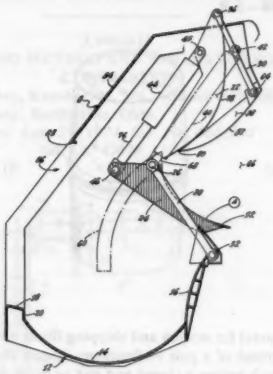
relatively rigid inclined wall means,

a relatively flexible annular first hinge means connecting said wall means to said sealing means,

a relatively flexible annular second hinge means connecting said wall means to said button means,
said inclined wall means extending downwardly and outwardly from said second hinge means to said first hinge means,
said connecting means being transversely narrower in axial cross section than said button means,
said first and said second hinge means being axially substantially thinner and transversely substantially narrower than said inclined wall means,
said cap means which is formable from said capsule means and said plug means cooperating so that when said capsule means is moved from an unsealed position to a sealed position, and converted to said cap means by screw thread formation,
i. said button means is moved fron an equilibrium position to an axially lower depressed position,
ii. said connecting means translates the axial movement of said button means into transverse expansion of said sealing area means from an unsealed position to a sealed position against the interior of said container neck,
said cap and said plug means furthermore cooperating so that when said cap is in said sealed position,
i. said button means is axially depressed,
ii. said plug means is in an unstable position,
iii. said sealing area means is in a transversely expanded position of sealing engagement against the interior neck of said container, said plug means then forming an air-tight barrier between the container contents and the surrounding atmosphere, and
iv. said second hinge means is axially closer to said flange means than said first hinge means,
said cap movable from said sealed position into an unsealed position by unscrewing same, said cap and said plug means cooperating when said cap is in said unsealed condition so that
i. said button means is in an equilibrium position,
ii. said plug means is in an equilibrium positon, and
iii. said sealing area means is out of sealing engagement with the interior neck of said container.

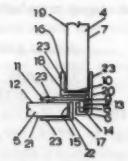
3,940,006
REFUSE HOPPER
Fred T. Smith, Dearborn Heights, Mich., assignor to Sargent Industries, Inc., Los Angeles, Calif.
Division of Ser. No. 264,021, June 19, 1972, Pat. No. 3,899,091. This application Feb. 8, 1974, Ser. No. 440,722
Int. Cl.² B65D 7/02; B65F 3/00
U.S. Cl. 220—1 T **12 Claims**

1. In combination in a refuse hopper for use with packer means for compressing refuse in the refuse hopper for transfer of the refuse into a storage body and storage in the storage body comprising:
a rearwardly disposed lip over which refuse is dumped into said hopper;
an arcuate bottom portion extending forwardly in the arcuate configuration;
a vertically disposed wall portion contiguous to said lip and said curved bottom portion for facilitating the shearing of refuse overhanging the rearwardly disposed lip;
a vertically disposed packing surface contiguous to said curved bottom portion at the forward end of the curved bottom portion, and
side walls contiguous to the arcuate bottom portion and the



wall portion and the packing surface to define the enclosure constituting the refuse hopper.

3,940,007
CONTAINERS
Aubrey Ronald Griffiths, P.O. Box 4014, Hamilton, New Zealand
Filed Oct. 22, 1974, Ser. No. 517,109
Int. Cl.² B65D 7/00
U.S. Cl. 220—4 F **4 Claims**



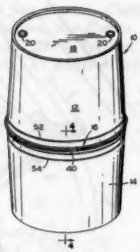
1. A container comprising:
a base;
a plurality of container sections each comprising four vertical sides;
each adjacent pair of sides including a first side having a corner member including at least a substantially J shaped part extending therefrom, and a second side having a corner member including at least a substantially L shaped part extending therefrom;
said first and second sides being relatively slidably movable with a toe of said L shaped part engaged between a toe and a stem of said J shaped part, with longitudinal movement of one of said sides relative to the other of said sides being prevented; and
a first L shaped member having a stem fixed to an inner face of said first side and a toe adjacent an end face of said first side.

3,940,008

COLLAPSIBLE REUSABLE BARREL FOR FLUIDS

Robert D. Flanders, 18040 Lower Boones Ferry Road, Tigard, Oreg. 97223

Filed May 22, 1972, Ser. No. 255,597
Int. Cl.² B65D *7/02, 45/16*
U.S. Cl. 220—5 R **2 Claims**



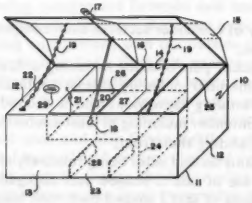
1. In a barrel for storing and shipping fluids and other materials comprised of a pair of frustrum-shaped shell-like barrel sections, each having a closed end and an open end larger than said closed end and being interchangeably nestable one within the other when disassembled, said barrel sections each having mating means for sealingly and detachably joining said open ends together with the respective interiors of said two barrel sections facing one another, the improvement wherein said mating means comprises: a pair of projecting flanges each extending peripherally around the open ends of said barrel sections and having a respective pair of lips formed peripherally around the edges thereof, a resilient gasket for inserting between said flange pair, and a plurality of unitary C-shaped clamp members spaced around the periphery of said flange pair for holding said flange pair in non-contacting close proximity with said gasket compressed therebetween, said clamp members having their respective ends bend inwardly toward one another for interlocking with said respective lips formed around said flange pair and being detachable from said flange pair by the pressing of said barrel sections together momentarily to increase the compression of said resilient gasket thereby freeing said clamp members from engagement with said flange pair.

3,940,009

TRUCK BOX

Julius Szeles, 1403-10th Ave., Regina, Saskatchewan, Canada

Filed Aug. 26, 1974, Ser. No. 500,718
Claims priority, application Canada, Aug. 28, 1973, 179795
Int. Cl.² B65D *87/00*
U.S. Cl. 220—20 **2 Claims**



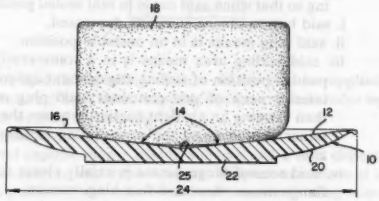
1. A box for use in open truck boxes and adapted to receive a spare tire and wheel comprising an open topped enclosure, cover means secured to the enclosure and adapted to selectively enclose the open top, at least one fuel storage tank formed within said box having a filler cap thereon, a divider in said box defining with said box and said tank, a tire and wheel storage area for the receipt and storage of the associated spare tire and wheel and tool storage areas also formed in said box, said fuel tank comprising an L-shaped fuel tank, one leg of said tank lying at one end of said box, the other leg of said fuel tank extending across the lower portion of said box and terminating spaced from the other end of said box, the space defined by the distal end of said other leg and the adjacent end wall of said box forming said tire and wheel storage area adapted to receive the associated spare tire and wheel vertically therein.

3,940,010

CAKE PLATE

Betty Sears, San Bruno, Calif., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Mar. 26, 1975, Ser. No. 562,255
Int. Cl.² A47G *19/00*
U.S. Cl. 220—23.86 **8 Claims**



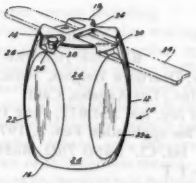
1. A circular dish comprising a food receiving top surface having a centrally pointed conical wall therein, an external side surface intersecting said top surface at the periphery of said top surface and a bottom external surface intersecting said side surface.

3,940,011

ALL PLASTIC DRUM

Robert A. Dubois, Marion, Ohio, and William H. Gushard, Staten Island, N.Y., assignors to Greif Bros. Corporation, Delaware, Ohio

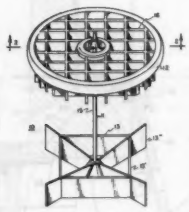
Filed Mar. 26, 1975, Ser. No. 562,124
Int. Cl.² B65D *7/42*
U.S. Cl. 220—66 **14 Claims**



1. An industrial drum molded of resinous material comprising: an elongated hollow body member, said member having a circular top end, a circular bottom end, four flat sides spaced approximately 90° apart formed integrally with and disposed about said body member extending between said top and bottom ends, rounded surfaces blending adjacent sides with each other, surfaces blending said flat sides and said drum bottom end, the blending surfaces are arcuate with the diameter of the curves of the transverse sections progressing from the ends to the drum center progressively increasing, means

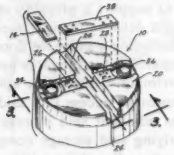
closing the bottom end of the drum, means closing the top end of the drum, walls defining a cavity aligned with one of the flat faces extending downwardly from the outer circular periphery of said top end, a neck fitting extending upwardly from said cavity to a height below that of the means closing the top end of the drum, the cavity extending over a minor sector of the circle defined by the periphery of the top end, the cavity walls surrounding said fitting except from a vertically downward direction and a direction laterally toward the aligned flat face, and being accessible laterally from only the direction of the aligned flat face and from a vertically downward direction.

3,940,012
SPLASH GUARD FOR CUPS
Bruce N. Addington, 1402 Grant Ave., Boise, Idaho 83706
Filed Jan. 3, 1975, Ser. No. 538,501
Int. Cl.² A47G *19/22*
U.S. Cl. 220—90.4 **3 Claims**



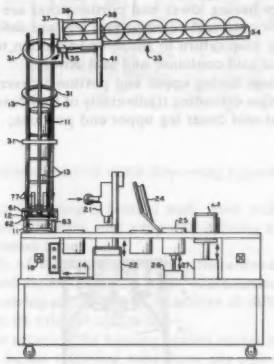
1. A splash guard for cups, comprising:
a pedestal having an outwardly, horizontally projecting base and on upstanding post issuing centrally from said base; and a vertically disposed openwork having a centrally disposed, vertically oriented sleeve operable to slide over said post, said sleeve being provided on its interior side with a pair of leaf-spring members which ride over the exterior of said post.

3,940,013
PLASTIC DRUM
Richard L. Bonnett, Eldora, Iowa, assignor to Quality Products, Inc., Eldora, Iowa
Filed Apr. 8, 1974, Ser. No. 459,064
Int. Cl.² B65D *25/28*
U.S. Cl. 220—94 R **7 Claims**



1. A drum, comprising,
a bottom portion,
a side wall means extending upwardly from said bottom,
a top portion closing the upper ends of said side wall means and dwelling in a substantially horizontal plane,
first and second channel means formed in said top portion and intersecting each other at substantially right angles, said first channel means being deeper than said second channel means and extending completely across said top portion,
a support bar means secured to said top portion and positioned in said second channel means and extending over and through said first channel means,
said first channel means being uninterrupted with protuberances to permit a tine means of a lifting apparatus to be inserted therein below said support bar means.

3,940,014
FEEDING METHOD AND APPARATUS FOR CONTAINERS
Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 29, 1974, Ser. No. 464,954
Int. Cl.² G07F *11/00*
U.S. Cl. 221—10 **18 Claims**



1. Apparatus for feeding unfilled containers comprising:
first conveyor means for providing a supply of containers having uniformly oriented open tops to a transfer station;
container release means located at said transfer station for permitting a container to pass said transfer station in response to receipt of a container advance signal by an actuation means operably connected to said container release means;
second conveyor means for accepting a container which has passed said transfer station and delivering said container to a container dispensing station;
container dispensing means located at said container dispensing station for orienting each container arriving at said container dispensing station and releasing each container; and
signal generating means for delivering said container advance signal to said container release actuation means in timed relationship with the operation of said container dispensing means.

3,940,015
REFILL DEVICE FOR GAS LIGHTERS
Ricardo Aguirre Gili, Barcelona, Spain, assignor to Flamagas S.A., Barcelona, Spain
Filed Jan. 9, 1974, Ser. No. 431,984
Int. Cl.² B67D *5/37*
U.S. Cl. 221—96 **2 Claims**

1. A refill device for gas operated lighters comprising:
a gas container having an end; a gas outlet valve at said end of said container; a collar around said container near its said one end and spaced from said outlet valve;
a separate cover having an axis and fitted on said container over said end; said cover having a top side away from said container; said cover including a plurality of compartments, which are arrayed around said cover axis in positions that enable access into the tops of said compartments through said cover top side and through an aper-

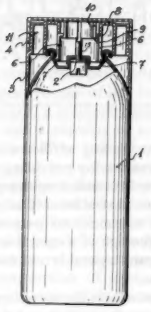
ture in a covering cap; each said compartment being for containing a different outlet valve adapter;

a plurality of outlet valve adapters; in each of at least some of said compartments is a respective said adapter; each said adapter being connectable to said outlet valve of said refill device and also to the inlet valve of a particular lighter;

said cover and said container being provided with respective complementary fastening elements, which said fastening elements are interengaged by pressing said cover and said container together;

said cover fastening elements comprise a plurality of resilient legs, arcuately curved around and arrayed around said cover axis; said legs being secured to and depending from said cover and extending toward said collar; said container fastening elements comprise said collar; said cover legs having lower end portions that are shaped to be snap fit onto said collar as said legs are deformed and resiliently snap return to shape upon motion toward one another of said container and said cover;

said cover legs having upper end portions; cover leg transverse flanges extending transversely of said cover axis and located at said cover leg upper end portions;



said cover top side having an opening therethrough at said cover legs for cap flaps to pass therethrough;

a separate cap overlying said cover; said cap having a central region from which depend a plurality of resilient depending flaps that extend through said cover opening and that are shaped to engage and be snap fit onto said cover leg transverse flanges as said flaps are deformed and resiliently snap return to shape upon motion toward one another of said cover and said cap; the connection of said cap flaps and said cover leg transverse flanges being such that said cap can be rotated with respect to said cover around said cover axis;

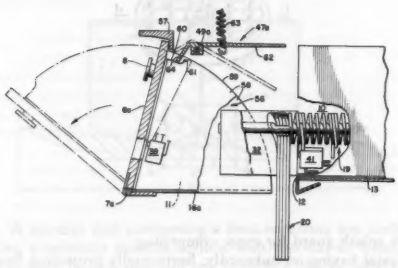
said cap being provided with a through aperture that is positioned in said cap so as to be alignable with said top of each said compartment in turn; said cap aperture being of a size sufficient to permit each said adapter to be drawn therethrough; said compartments being located around said cover axis such that rotation of said cap uncovers each said compartment in turn; said compartments being open topped at their said tops at said cover top side to communicate through said cap aperture with the exterior of said refill device.

3,940,016

ARTICLE VENDING APPARATUS WITH DOOR INTERLOCK

Merril Krakauer, One Deer Path, Short Hills, N.J. 07078

Filed July 25, 1974, Ser. No. 491,828
Int. Cl.² B65G 33/04
U.S. Cl. 221—129 21 Claims



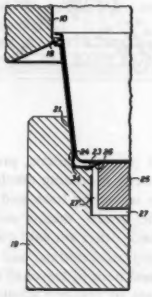
1. An article vending apparatus including, a cabinet having an interior storage compartment and an adjacent delivery compartment defining a storage/delivery cell, said storage compartment provided with a shelf having a forward discharge point and adapted to support a plurality of adjacent articles behind said point, said delivery compartment provided with a shelf, said cabinet including a movable door providing access to said delivery compartment, a movable gate assembly within said delivery compartment displaceable upon opening of said door to preclude customer access into said storage compartment, feeder means adjacent said storage compartment including means overlying said storage compartment shelf for engaging and advancing all articles within said storage compartment from the rear thereof to said discharge point and subsequently pushing same onto said delivery compartment shelf, displacing means for shifting said engaging means from a position overlying said storage compartment shelf to an alternate storage position, and said gate assembly including a pivotally mounted link to one side of said cell, a crossbar at one end of said link disposed in the rear of said delivery compartment, cam means at the other forward end of said link, and means carried by said door engageable with said cam means to raise said crossbar when said door is closed and lower said crossbar when said door is opened.

3,940,017

METHOD AND APPARATUS FOR DISPENSING BOWL-SHAPED OBJECTS OF A THIN MATERIAL ONE AT A TIME

Klas Ingvar Helmer Borgstrom, Malmo, Sweden, assignor to Aktiebolaget Platmanufaktur, Malmo, Sweden

Filed Mar. 31, 1975, Ser. No. 563,884
Claims priority, application Sweden, Apr. 11, 1974, 74/04984
Int. Cl.² B65H 3/08
U.S. Cl. 221—211 5 Claims



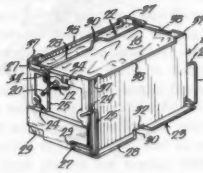
5. In an apparatus as claimed in claim 3, wherein the suction means is bowl-shaped having a cavity for receiving the bottom portion of the lowermost bowl-shaped object of the pile.

3,940,018

COMBINATION LIQUID CONTAINER AND DISPENSER

William R. Scholle, Corona del Mar, Calif., assignor to Scholle Corporation, Northlake, Ill.

Continuation-in-part of Ser. No. 291,952, Sept. 25, 1972, abandoned. This application Apr. 4, 1974, Ser. No. 457,707
Int. Cl.² B65D 25/22
U.S. Cl. 222—1 11 Claims



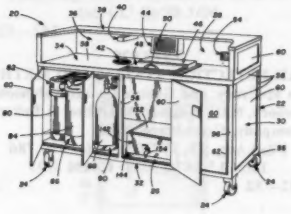
10. A method of packaging and dispensing milk in bulk form wherein the milk is to be dispensed from a bulk container adapted to fit into a standard dispensing cabinet having a maximum internal width, comprising the steps of providing a flexible bag filled with milk within an open top rigid case, said case having a width adapted to fit into said dispensing cabinet, dispensing said milk from said bag, removing and discarding said bag, augmenting the effective unyielding width of said case to a wider dimension, and processing said case with equipment responsive to cases having said wider dimension.

3,940,019

AUTOMATIC MIXED DRINK DISPENSING APPARATUS

Robert W. Kross, Dallas; Larry D. Fiel, Argyle; Charles R. Crockett; George B. Neely, both of Richardson, and Louis J. Benton, Plano, all of Tex., assignors to Leisure Products Corporation, Plano, Tex.

Filed Sept. 30, 1974, Ser. No. 510,655
Int. Cl.² B67D 5/56
U.S. Cl. 222—30 39 Claims



1. An automatic mixed drink dispensing apparatus comprising:

a housing including a bottom wall, front and back walls, opposed side walls, and a top wall defining a mixed drink preparation zone;

said walls of the housing defining therebetween a wholly enclosed liquor receiving zone characterized by means for receiving a plurality of quantities of different liquors each in its original container;

means for securing the housing against access to the interior of the liquor receiving zone from any point around the entire exterior periphery thereof;

said walls of the housing defining a wholly enclosed syrup receiving zone for receiving a plurality of quantities of different syrups each in its original container;

said walls of the housing defining a wholly enclosed water receiving zone;

said walls of the housing defining a wholly enclosed carbon dioxide receiving zone;

ice receiving means mounted in the upper portion of the housing and accessible from the mixed drink preparation zone;

liquid chilling means mounted in the bottom of the ice receiving means;

a liquid dispensing head mounted on the housing and extending into the mixed drink preparation zone at a point over the top wall of the housing;

drain pan means supported in the bottom of the housing and including valve means for selectively permitting fluid flow out of the drain pan means;

drain means for directing liquids from a point in the mixed drink preparation zone under the dispensing head and from a point in the ice receiving means to the drain pan means;

a plurality of liquor pumps each for withdrawing liquor from one of the quantities of liquor in the liquor receiving zone and for discharging the liquor through the dispensing head;

syrup pumping means for withdrawing syrups from the quantities of syrup in the syrup receiving zone and for directing the syrups through the liquid chilling means and through the dispensing head;

water pumping means for withdrawing water from the water receiving zone and for directing water through the liquid chilling means and through the discharge head;

carbonating means for receiving water from the water pumping means, for receiving carbon dioxide gas from the carbon dioxide receiving zone, and for forming carbonated water;

means for directing carbonated water from the carbonating means through the liquid chilling means and through the dispensing head;

said liquors, syrups, water, and carbonated water defining a plurality of liquids available for formulating mixed drinks; and

electronic circuitry means for receiving a plurality of input signals each individual to a particular mixed drink and responsive thereto for selecting one or more of the plurality of liquids to be used in formulating a desired mixed drink and for effecting discharge of a predetermined quantity of each selected liquid through the dispensing head.

3,940,020

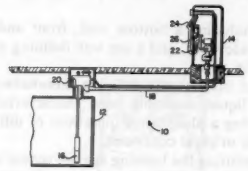
LEAK DETECTION SYSTEM AND METHOD

Rollin John McCrory, and George Dennis Robinson, Jr., both of Greensboro, N.C., assignors to Gilbert & Baker Manufacturing Company, Greensboro, N.C.

Filed Aug. 23, 1973, Ser. No. 390,786

Int. Cl.² B67D *5/14*; G01M *3/08*

U.S. Cl. 222—52 **26 Claims**



1. A leak detection system for use with a fluid pump, a dispenser, a dispenser valve for controlling fluid flow through said dispenser, a conduit connecting said pump and dispenser, pump control means for activating and initiating deactivation of said pump, and a second valve in said conduit to isolate said pump from said dispenser when a fluid is not being dispensed, said system comprising first means for enabling operation of said pump while said dispenser valve is closed by delaying deactivation of said pump for a finite predetermined period of time after said pump control means is operated to initiate deactivation of said pump, second means for ensuring leak free closure of said second valve when said dispenser valve is closed, and a leak detector including a member in fluid flow communication with said pump and with a portion of said conduit between said second valve and said dispenser, said member being responsive to a differential fluid condition between said second conduit portion and said pump, and signal means responsive to said member to indicate the existence of a predetermined differential fluid condition when said pump is operating and said dispenser valve is closed.

26. A method of detecting leaks in a system having a fluid pump, a dispenser, a conduit connecting said pump and dispenser and a valve in said conduit comprising the steps of

a. activating the pump and opening the dispenser to dispense fluid;

b. closing the dispenser;

c. applying a force on said valve from an energy source external to said valve to forceable seal the valve;

d. applying a predetermined pressure on the fluid in the portion of the conduit between the valve and dispenser within a predetermined period of time after the dispenser is closed;

e. sensing a flow of fluid in said portion of the conduit; and

f. energizing signal means if said flow of fluid is greater than a predetermined amount.

3,940,021

CAR HAVING PLURAL SIDE POURING LADLES

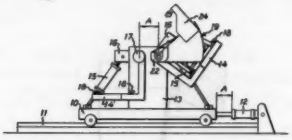
Rudolf Valentin Sillen, and Eric-Olof Sjögren, both of Ronneby, Sweden, assignors to Kockums Jernverksaktiebolag, Kallinge, Sweden

Filed Apr. 3, 1975, Ser. No. 564,803

Claims priority, application Sweden, Apr. 11, 1974, 7404981

Int. Cl.² B22D *41/04*, *41/12*

U.S. Cl. 222—129 **4 Claims**



1. An apparatus for pouring metals, preferably for use in association with automatic moulding machines, comprising a ladle car, arranged for travelling back and forth along a path of travel, two tiltable cradle means mounted in mirror-inversed relation to each other on said car, tilting shafts for said cradle means mounted on said car and extending substantially transversely to said path of travel of said car, means for tilting said cradle means by rotation about said tilting shafts, a removable ladle in each of said cradle means, said ladles in said cradle means being mirror-inversed to each other, and pouring spouts on said ladles, said pouring spouts having centerlines substantially colinear with the respective axes of said tilting shafts.

3,940,022

DOUBLE-TYPE CONTAINER FOR COOLING BEVERAGE

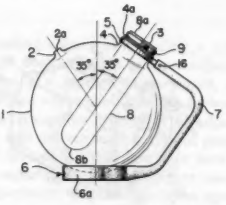
Komi Muramoto, No. 17-4 8-chome Miyamoto-cho, Funabashi, 273, Japan

Filed Oct. 2, 1974, Ser. No. 511,163

Claims priority, application Japan, June 26, 1974, 49-74281; June 29, 1974, 49-75993

Int. Cl.² B67D *5/60*

U.S. Cl. 222—130 **2 Claims**



1. A container comprising a closed container outer body having a supporting base portion, a pouring spout having a spout opening defined on said body extending upwardly to one side thereof, a receiving opening defined on said body on the opposite side thereof from said spout, and a cylindrical container extending through the receiving opening and through the center of said outer container body and supported on said outer container body and having an inner closed end, said closed outer container body comprising a spherical member, said pouring spout comprising a raised substantially cylindrical projection from the surface of said outer container body, said outer cylindrical body having an outwardly extending

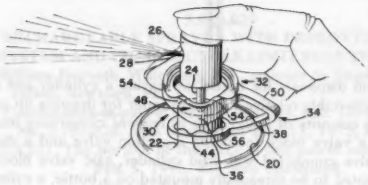
collar forming the rim around said receiving opening, said supporting base portion comprising a handle having a flattened base part supporting said spherical outer container body, an intermediate handle part and an upper part engaged around said collar, said handle including an encircling belt portion extending around said collar, said inner container having a belt therearound with downwardly projecting circumferentially spaced teeth engaged on the edge of said collar, the space between said teeth defining an air gap for the flow of air between said outer container body collar and said inner container.

3,940,023

CHILD-PROOF SAFETY LOCKING DEVICE

Herbert R. Umstead, Warwick, N.Y., assignor to Avon Products, Inc., Suffern, N.Y.

Filed Nov. 27, 1974, Ser. No. 527,804
Int. Cl.² B65D *83/14*
U.S. Cl. 222—153 **14 Claims**



1. A safety locking device adapted for use in selectively locking an aerosol type valve assembly on aerosol container having a movable valve stem connected to a push-button actuator head which stem is slidable within a valve pedestal formed on the valve assembly to thereby prevent depression of the actuator head such that the contents of the container cannot be dispensed comprising, in integral combination, at least a pair of first and second locking means formed adjacent opposite ends of said locking device, said first locking means being adapted to be removably secured to the valve pedestal, and said second locking means being movable between locked and unlocked positions wherein whenever in the locked position it is interposed between the actuator head and the valve pedestal to prevent depression of the actuator head toward the valve pedestal, and wherein, in the unlocked position permits depression of the actuator head toward the valve pedestal, and biased hinge means having said first and second locking means respectively connected therewith for biasing said second locking means with respect to said first locking means such that whenever said first locking means is secured to the valve pedestal said second locking means is biased to the locking position, and for automatically returning said second locking means from said unlocked position to said locked position whenever application of force sufficient to overcome the bias of said biased hinge means for urging said second locking means toward the unlocked position is released, said second locking means includes a second locking member which defines therethrough a generally elliptical opening of sufficient dimension to permit the passage therethrough of the push-button actuator head whenever said second locking means is in the unlocked position, said second locking member also defining an obstruction portion which whenever said second locking means is in the locked position said obstruction portion is so situated to obstruct movement of the push-button actuator head towards the valve pedestal, said obstruction portion being defined by an integral V-shaped portion which gradually tapers upwardly towards the apex thereof for facilitating ranges of valve stem and push-button actuator head heights above said second locking means, said obstruction portion also being formed with a plurality of discrete generally parallel grooves for preventing side slip of said second locking member in response to downward movement of the push-button actuator head towards the valve pedestal whenever said second locking means is in said locked position.

3,940,024

AEROSOL DISPENSING DEVICE

John A. Russo, Norwalk, Conn., and Mishel Greenberg, New Hyde Park, N.Y., assignors to Chesebrough Pond's Inc., Greenwich, Conn.

Filed Aug. 14, 1974, Ser. No. 497,398
Int. Cl.² B67D *5/06*
U.S. Cl. 222—182 **6 Claims**

1. An aerosol dispensing device adapted for use with a pressurized aerosol container for direct and prolonged evaporative dispensing, said container having a dispensing valve extending upwardly therefrom, which comprises: a base member adapted to engage the top of said container, said base member including a vertically extending open ended hub portion and a cylindrical wall portion spaced radially outwardly from said hub portion to define an annular receiving area therebetween; a valve actuator slidably positioned coaxially within said hub portion, said actuator having a downwadly facing, valve engaging chamber and a discharge passage extending from said chamber radially outwardly to the exterior of said actuator; said hub portion and wall portions defining dispensing ports in radial alignment with the outlet end of said passage; means for preventing relative angular movement between said actuator and said dispensing ports; a carrier member defining a central bore adapted to receive said hub therein and having a plurality of angularly spaced apart, radial ribs extending downwardly into said receiving area, said ribs defining a sector spray zone and a complementary annular shaped carrier zone; a strip of absorbent material positioned in the carrier zone of the ribs; means for interlocking said carrier to said base member while permitting relative angular rotation therebetween, whereby said spray zone may be aligned with said ports for direct dispensing of the container product and said carrier may be rotated to position said absorbent material in front of said discharge passage for dispensing of product thereon and prolonged evaporation therefrom.

3,940,025

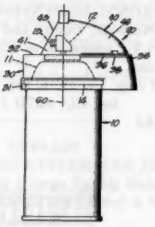
AEROSOL SAFETY CAP WITH TWO PIECE FINGER ENTRY

Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, Houston, Tex.

Filed Sept. 23, 1974, Ser. No. 508,364
Int. Cl.² B65D *83/14, 55/02*
U.S. Cl. 222—182 **6 Claims**

6. An aerosol safety cap comprising a lower member and an upper member, said lower member including a horizontally extending platform portion, said upper member including a finger passageway portion, said upper member being rotatably

supported upon said lower member for rotation about a vertical axis relative to said lower member between first and second rotational alignment positions, the configuration of said members being such that in the first position of said upper member said two members cooperatively provide a downwardly opening finger passageway for access to the interior of the safety cap, but in the second position of said upper member, the horizontally extending platform portion of the lower member blocks finger access to the finger passageway portion of the upper member.



3,940,026

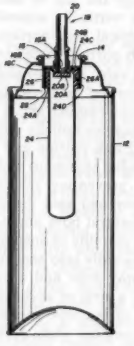
CONTAINER FOR PRESSURE DISPENSING OF FLUID

Calvin L. Kain, Bartlesville, Okla., assignor to KRDC, Bartlesville, Okla.

Continuation-in-part of Ser. No. 344,931, March 26, 1973, abandoned. This application July 13, 1973, Ser. No. 378,886

Int. Cl.² B67D 5/06

U.S. Cl. 222—212 **11 Claims**



1. A container for pressure dispensing fluid products comprising:

a vessel having an opening in one end thereof;

a cover closing said vessel opening, the cover having an opening therein and having, as a portion thereof, a valve support sealably closing the cover opening;

valve means carried by said valve support for providing a fluid passageway therethrough;

an expandable and contractable pressure unit of elastomeric material having a tubular portion terminating at an open end with an annular surface, said annular surface being bonded to said vessel end cover, and means carried by the pressure unit for stiffening the tubular portion at and adjacent to the open end thereof; and

whereby fluid product contained by the pressure unit in an expanded position is expelled by return force exerted by the elastomeric material of the pressure unit.

3,940,027

DISPENSER FOR A BOTTLE TOP

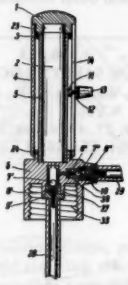
Karl Marterer, Waldenhausen, Germany, assignor to Firma Rudolf Brand, Wertheim, Germany

Filed Apr. 5, 1974, Ser. No. 458,242

Claims priority, application Germany, Aug. 30, 1973, 2343687

Int. Cl.² G01F 11/06

U.S. Cl. 222—309 **13 Claims**



1. Liquid dispenser for bottle top having a cylinder and a plunger adjustable relative to said cylinder for drawing up an adjustable quantity of liquid such as reagent comprising said cylinder, a valve block including a suction valve and a discharge valve connected with said cylinder, said valve block being adapted to be threadedly mounted on a bottle, a cylinder sleeve provided with a scale received concentrically over said cylinder and being slidable and rotatable relative to said cylinder and being connected with said plunger, said plunger being slidable in said cylinder, and means being provided for adjusting the stroke of said plunger to determine and indicate a desired volume to be dispensed, said means comprising a contact ring fixed on said cylinder, and an adjustable excursion stop in said cylinder sleeve for cooperating with said ring, said cylinder sleeve defining a longitudinal slot, said adjustable excursion stop being disposed in said slot.

3,940,028

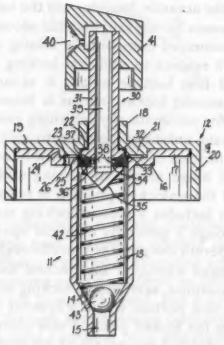
PUMP

Walter C. Beard, South St., Middlebury, Conn. 06762

Filed Sept. 16, 1974, Ser. No. 505,963

Int. Cl.² G01F 11/02

U.S. Cl. 222—321 **11 Claims**



1. A dispensing pump and valve assembly for use with a container for liquid comprising, a chamber provided with an inlet to admit liquid from the container past a one-way valve, the chamber having a cylindrical wall, a cap fitted on said

chamber, the cap having a portion of its under side spaced from a chamber surface to provide a channel in communication with the interior of the chamber and with the interior of the container, a plunger having a cylindrical stem portion adapted to pass freely through an opening in the cap, an annular flange having a downwardly facing surface, a second cylindrical surface portion adjacent said downwardly facing surface, a plunger base having an upwardly facing annular surface adjacent said second cylindrical surface portion, a longitudinal passage in the plunger, a lateral passage connecting said longitudinal passage with the second cylindrical surface portion, an annular washer of distortable material having a cylindrical inner surface and parallel upper and lower surfaces normal to said inner surface, the height of said inner surface being substantially constant and equal to the height of said second cylindrical surface portion and being less than the width of said washer across any radial section, said washer resting in sealing engagement against at least a portion of said downwardly facing surface, said upwardly facing annular surface and said chamber wall, and a spring biasing the plunger upward to hold the washer in a position to close off said channel.

3,940,029

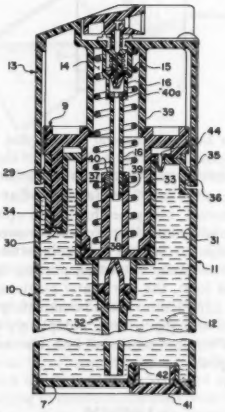
RECHARGEABLE SPRAYER WITH IMPROVED VALVE SYSTEM AND CHARGE CYCLE LIMIT STOP THEREFOR

William Horvath, Watchung, N.J., assignor to Thiokol Corporation, Newtown, Pa.

Continuation-in-part of Ser. No. 226,204, Feb. 14, 1972, Pat. No. 3,790,034. This application Dec. 13, 1973, Ser. No. 424,521. The portion of the term of this patent subsequent to Feb. 5, 1991, has been disclaimed.

Int. Cl.² B67D *5/32*; **G01F** *11/04*

U.S. Cl. 222—340 **28 Claims**



1. In a rechargeable liquid spayer comprising a rotatable container including a receptacle for holding a quantity of liquid, an opening for filling the receptacle with liquid, an inner, pressurizable chamber adapted to receive a charge of liquid from said receptacle, liquid conduit means for conducting said liquid charge from said receptacle to said chamber, a spray cap rotatably mounted on said container, a piston in said cap adapted to move therein and in said chamber, charging means on said container operatively associated with said piston for moving said piston in said cap and in said chamber when said container is rotated relative to said cap, compressible means in said cap positioned therein in biasing relation to said piston, a spray nozzle on said cap including; associated liquid conduit means communicating with said chamber, liquid discharge control means in said conduit for controlling discharge of liquid from said chamber, and differential pressure operated fluid control means in said container for controlling the passage of said liquid charge into said chamber and venting said receptacle to the atmosphere, the improvement comprising;

said differential pressure operated fluid control means comprising, a first valve element sealingly positioned in said receptacle liquid conduit means proximate one end of said charge chamber, said element having a hollow, resilient body and side walls, said side walls adapted to move apart in response to fluid pressure inside said body to expand said body and open said valve permitting liquid to flow into said chamber; and,

a second valve element sealingly fitted to said container having a hollow, resilient body and side walls, said side walls adapted to move apart in response to fluid pressure inside said body to expand said body and open said valve permitting air to flow into said receptacle.

3,940,030

DISPENSER DEVICE FOR TAKING OUT CONTENTS

Hirosi Kondo, No. 30-4, Hanazono-cho, Nagasaki, Nagasaki, Japan

Filed Aug. 16, 1974, Ser. No. 498,227

Int. Cl.² B67D *5/54*

U.S. Cl. 222—384 **4 Claims**

1. An isolation type dispenser device comprising, in combination, a container having a cylinder therein and including a bottom member; an isolation member airtightly and slidably mounted within the cylinder and dividing the cylinder into a contents storage chamber and a propellant chamber; a piston rod slidable into the container, the piston rod having an axial passage and an orifice opening transversely therefrom, a dispenser head communicating with the passage and mounted on said piston rod; a spring within the container urging the piston rod upwardly; a pressure propellant generating means for creating compressed air by the descent of the dispenser head and the piston rod; a passage between the generating means and the propellant chamber within the cylinder for conducting compressed air thereto to act upon the isolation member; and a further passage between the contents storing chamber and the axial passage in said piston rod, whereby the contents in said contents storage chamber are forced under the pressure created by the generating means through the axial passage and the dispenser head to be dispensed.

3,940,031

REVERSE ACTING ROLLING DIAPHRAGM FOR EXPELLING LIQUIDS

Bernard Fishman, Fort Lee, N.J., assignor to Thiokol Corporation, Newtown, Pa.

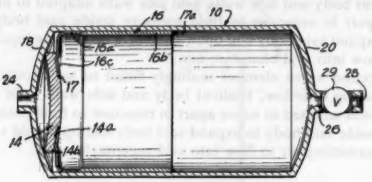
Filed Dec. 16, 1966, Ser. No. 602,420

Int. Cl.³ B67D *5/04*

U.S. Cl. 222—386.5 **5 Claims**

1. A liquid storage tank of the type having a rolling diaphragm therein comprising a sleeve of flexible material attached to the tank at one end and to the periphery of a rigid

piston at the opposite end and adapted to be operated by a pressurizing medium acting on the piston in successive stages to roll the diaphragm back on itself and expel liquid from the tank, the combination with said tank and rolling diaphragm of a construction in which the diaphragm sleeve has a thick wall section to resist buckling or distortion of the diaphragm initially and between stages, a thin wall section adjacent the rigid piston to permit limited rolling of the diaphragm by the expansion of the liquid acting on the piston due to absorbed heat, and means for producing a first fold in the thin wall section of the diaphragm to initiate rolling of the diaphragm in one direction during the first stage of applied pressure and a reverse fold in the thin walled section of the diaphragm sleeve adjacent the piston to control the location of the limited rolling of the diaphragm sleeve by the expansion of liquid after the first stage of applied pressure.



3,940,032

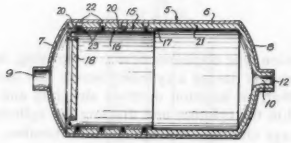
ROLLING DIAPHRAGMS FOR EXPELLING LIQUIDS

Milton Gershon, Morristown, N.J., assignor to Thiokol Corporation, Newtown, Pa.

Filed Dec. 16, 1966, Ser. No. 602,421

Int. Cl.² B67D *5/04*

U.S. Cl. 222—386.5 **8 Claims**



1. In a tank for storing liquids having a rolling diaphragm for positively expelling liquid of the type comprising a sleeve conforming to the contour of a surrounding wall of the tank with one end attached thereto and its opposite end attached to a piston and which rolls back on itself upon the application of a pressurizing fluid against the piston to expel liquid from the tank, that improvement which comprises attaching the sleeve of the rolling diaphragm to a surrounding wall by a plurality of spot welds constructed to tear loose from the surrounding wall and of a number and spaced arrangement to resist radial buckling and release successively during rolling of the diaphragm sleeve.

3,940,033

COFFEE MEASURE

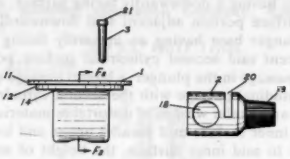
Norton T. Brian, 1129 Harrop St., Ogden, Utah 84404

Filed Nov. 1, 1974, Ser. No. 520,035

Int. Cl.² G01F *11/28*

U.S. Cl. 222—452 **3 Claims**

1. A dispensing device for powdered or granular material with a unitary structure wherein there is a mounting flange, a depending body having an inlet, outlet and fixed measuring cavity therein, a cylindrical slot opening from one side and extending beyond the cavity, but not to the rear, so as to leave a core containing said cavity, and a cylindrical member fitted into said slot, having an opening therein which may be aligned with said inlet, outlet and cavity, being held into the main body by means of a pin, said pin acting also as a stop to limit rotation of said cylindrical member, allowing said opening in said member to align with inlet, outlet and cavity in main body, and means to rotate said member between inlet and outlet.



3,940,034

CONTAINER

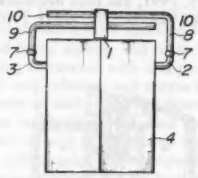
Mitiaki Adachi, 1167, Shimokurato-cho, Totsuka; Yokohama, Japan

Filed Nov. 19, 1973, Ser. No. 416,844

Claims priority, application Japan, Mar. 30, 1973, 48-038416

Int. Cl.² B67D *3/00*

U.S. Cl. 222—478 **2 Claims**



1. A container being hexagonal in top plan to provide at least a pair of opposed flat sides and a pair of shorter flat sides disposed intermediate said first mentioned flat sides, a pipe extending from each of said first mentioned flat sides adjacent an upper edge thereof, said pipes having an upwardly extending and a horizontally extending portion connected therewith, a swivel joint disposed in said upwardly extending portions whereby said horizontally extending portion can be rotated about said swivel joint, the horizontal portions of said pipes being of a length sufficient to extend completely across the top of said container, said pipes being completely open throughout their length to communicate with the interior of said container at all positions of aid pipe.

3,940,035

FOLDED CARTON HAVING DISPENSING MEANS

Wilhelm Hüberli, Koniz, Switzerland, assignor to Zeiler A.G. Werk Koniz, Koniz, Switzerland

Filed Oct. 29, 1974, Ser. No. 518,946

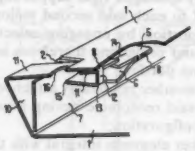
Claims priority, application Switzerland, Feb. 13, 1974, 1978/74

Int. Cl.² B65D *3/00, 5/06*

U.S. Cl. 222—528 **7 Claims**

1. A folded carton having dispensing means, wherein said dispensing means comprises a displaceable slide which has two terminal positions, the first exposing a dispensing aperture and the second closing the dispensing aperture, the slide being connected by a first fold to a link portion, the link portion being connected by a second fold to a wall portion of the carton which is non-displaceable in a direction parallel to the

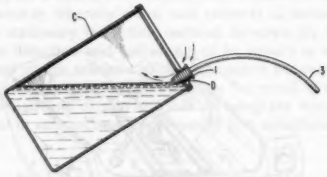
plane of the slide, the link being disposed for rotating displacement about said first and second folds and being sandwiched between portions of the carton which are capable of elastic displacement in a direction transverse to the plane of the slide, said portions of the carton being elastically spread upon rotating displacement of said link occurring during shifting of said slide from one of its terminal positions into the other, the link passing thereby through unstable intermediate positions, and said slide being firmly held in each of its terminal positions by the resilient force of said portions capable of elastic displacement.



3,940,036
REMOVABLE POURING SPOUT ADAPTABLE TO DIFFERENT SIZE CONTAINER OPENINGS

Marvin Leon Parker, 5936 Ford Court, Brighton, Mich. 48116

Filed July 2, 1974, Ser. No. 485,106
Int. Cl.² B67D *3/04*
U.S. Cl. 222—530 4 Claims



1. A pouring spout for a container having a discharge opening for pouring liquid contents therefrom, said spout comprising:

a plug having inner and outer ends and an opening therethrough extending from the inner end to the outer end for discharging contents from the container through said plug opening;

said plug having an outer periphery including an air-admitting external groove formed therein to admit air to the interior of the container during discharge of the contents therefrom through said plug opening;

an elongated discharge tube connected at one end with the plug opening to conduct contents from said plug opening;

said plug being formed of yieldable material and having an outer periphery formed by a plurality of circumferentially disposed resilient ribs, said ribs being spaced in a direction from said outer end to said inner end of said plug and being of gradually decreasing size from said outer end to said inner end to define a ribbed periphery which tapers toward said inner end to allow said plug to fit container discharge openings of various sizes, each rib including:

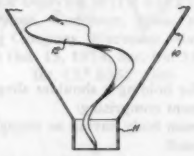
an outer surface extending away from the longitudinal axis of said plug opening in a direction toward said inner end and forming an acute angle relative to the longitudinal axis of said plug opening so as to be compressed by, and in firm engagement with, said container discharge opening when said plug is installed therein; and

a lateral side extending at an angle relative to said outer surface for engaging a lip of said container discharge opening to limit the insertion of said plug into said container discharge opening.

3,940,037
DISCHARGE FROM HOPPERS

Lewis Ainsley Watson, Caarbrook, England, assignor to Simon-Carves Ltd., Cheshire, England

Filed June 21, 1974, Ser. No. 481,739
Claims priority, application United Kingdom, July 20, 1973, 34814/73
Int. Cl.² B67D *3/00*
U.S. Cl. 222—564 19 Claims

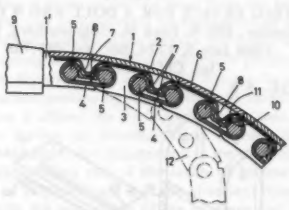


1. In combination with a hopper at least the lower part of which is symmetrical about a substantially central vertical axis and whose cross-sectional area reduces gradually over said lower part toward an outlet, a device for facilitating the discharge of material from said hopper comprising a helical blade rigidly secured to extend in the direction of said axis within said lower part of the hopper, said blade being so constructed and arranged as to impart a circular component of motion to the material as it runs through the lower part of the hopper towards the outlet and the width of said blade decreasing gradually from a maximum at its upper end to a minimum at its lower end.

3,940,038
WATCH-BRACELET

Georges Bernard Claude, 59, rue du Progres, 2300 La Chaux-de-Fonds, Switzerland

Filed Oct. 25, 1974, Ser. No. 518,069
Claims priority, application Switzerland, Nov. 16, 1973, 16136/73
Int. Cl.² F16G *13/18*
U.S. Cl. 224—4 J 8 Claims



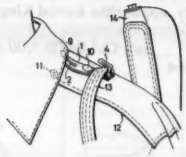
1. A watch-bracelet adapted to be attached to a watch-case and having two arms, each said arm comprising a series of links hinged to one another, each said link having a transverse profile in the shape of an arch and at least one longitudinal recess which opens inwardly and is open at each end of said link, the alignment of said recesses forming a groove extending longitudinally under said series of links of each said arm, said watch-bracelet further comprising a blade-spring lying against the bottom of each said groove and retaining means disposed under each said blade-spring between the arch-sides of said links, each said blade-spring having a curvature such that it urges the respective said arm to curl up, the first said link of each said arm being attached to said watch-case.

3,940,039

RETAINER FOR A SHOULDER SLING

Tatsunori Sasaki, 6-3,Futaba-cho, Itabashi, Tokyo, Japan

Filed May 14, 1974, Ser. No. 469,887
Claims priority, application Japan, Apr. 10, 1974, 49-11605
Int. Cl.[2] A45F 5/00
U.S. Cl. 224—5 P 2 Claims



1. A retainer for holding a shoulder sling on the shoulder portion of a garment comprising:

an elongated main body having an engaging hole adjacent one end thereof;

sling receiving means adjacent the other end of said body for receiving and preventing said shoulder sling from falling off of the retainer;

engaging means attached underneath the collar of said garment and engaged through the engaging hole in said main body for loosely and removably attaching said main body to said garment;

a metal plate secured to said main body bent at one end to form two stirrup openings spaced from each other above the outward surface of the metal plate when the metal plate is attached to the main body;

hook means rotatably fitted through and retained in the stirrup openings in said metal plate for holding the sling and preventing it from slipping off the shoulder of the garment;

a female portion of a snap closure positioned between said engaging hole and the other end of said main body; and

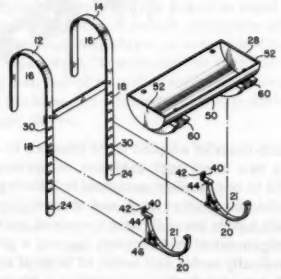
a male portion of a snap closure fitted underneath the collar of said garment at a position to receive the female portion when the main body is rotated about the engaging means, whereby the main body can be fastened underneath the collar of the garment out of sight when not needed to support a sling.

3,940,040

CARRYING DEVICE FOR A DOLL AND A CRADLE

Earl M. Haulter, 200 N. Penn St., Shippensberg, Pa. 17251

Filed July 3, 1974, Ser. No. 485,708
Int. Cl.[2] A45C 11/00
U.S. Cl. 224—5 R 4 Claims



1. A device for carrying an infant or a child's toy doll comprising:

a. a pair of curvilinear C-shaped first portions adapted to rest on the shoulders of a user of said device, and an elongated second portion depending from each C-shaped portion, each said second portion having a first major surface part facing a portion of said first portion and an oppositely disposed second major surface part, each elongated second portion having a plurality of perforations along at least a portion of the length thereof, thereby permitting the adjustment of the location of a supporting element and a receptacle member therealong;

b. a substantially C-shaped rigid supporting element releasably attached to each said second major surface part of said second portion by engaging selected ones of said perforations and projecting therefrom in a direction opposite said first portion;

c. a receptacle member removably attached to said supporting element, said receptacle having a substantially semicylindrical configuration;

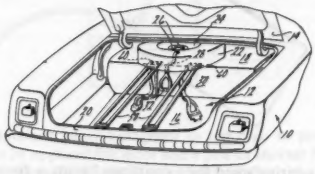
d. a pair of rocker elements integral with the outer semicylindrical side of said receptacle said rocker elements being spaced for association with said rigid supporting elements, said rocker elements including a pair of rockers parallel to each other spaced apart the distance equal to a width of a supporting element, said supporting elements each being receivable between a respective pair of rockers.

3,940,041

SPARE TIRE EXTRACTION DEVICE

John A. Bott, 931 Lake Shore Drive, Grosse Pointe Shores, Mich. 48236

Filed May 14, 1973, Ser. No. 360,094
Int. Cl.[2] B62D 43/00
U.S. Cl. 224—42.12 1 Claim



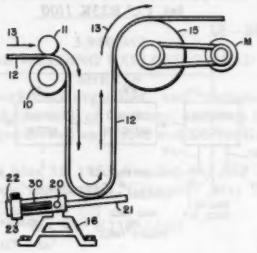
1. In combination, an automobile body having a longitudinal axis and an interior storage area, a raised wall along an access side of said storage area, said wall extending generally perpendicular to said axis and transversely of said automobile body, a spare tire assembly including a tire and wheel, means in said storage area supporting said assembly in a substantially horizontal attitude and substantially parallel to said axis, said wheel having a plurality of bolt holes therein, said bolt holes being defined by a plurality of axes arranged generally parallel to said wall, and a flexible strap having a length equal to at least the radial distance between said bolt holes and the outer periphery of said assembly and having a handle at one end thereof and a fastening element at its opposite end, said fastening element extending generally parallel to said wall and engaged with one of said bolt holes, said strap having a main body portion arranged substantially parallel to said automobile body axis and extending radially of said assembly along the underside thereof from said one bolt hole to a position where said handle may be conveniently grasped by a person reaching over said wall into said storage area, whereupon said strap may be pulled toward said wall by the said person to cause said assembly to be biased rearwardly and upwardly of said storage area, whereby the rearwardly facing portion of said assembly is moved upwardly and rearwardly so that said assembly passes up and over said wall.

3,940,042

SPEED CONTROL DEVICE

Norman A. Keck, 707 4th Ave., Joliet, Ill. 60433

Filed Oct. 24, 1974, Ser. No. 517,795
Int. Cl.² B65H 25/04
U.S. Cl. 226—44 7 Claims



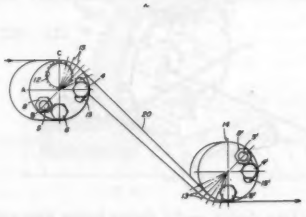
1. In a machine wherein a flexible material is passed at varying speeds through one section of the machine and also through another section of the machine with the machine having a device coordinating the speed of said material and each of said sections, the improvement in said device comprising a tiltable structure, means sensitive to the extent of the material's sag between said sections for tilting said structure, an impedance element in the form of a coil about a straight longitudinal axis, said longitudinal axis extending substantially horizontally and radially of the axis of tilt of said structure, a strip of electrically conductive material parallel and spaced from said coil, said strip forming with said coil a straight raceway for a ball, a ball of electrically conductive material in said raceway whereby when said raceway is horizontal said ball is stationary but when inclined downwardly in one or another direction said ball is moved by gravity in said direction, and means sensitive to the impedance between one end of said coil and said ball for changing the speed of said material through one of said sections to bring the speed of said material in said sections more nearly into equilibrium.

3,940,043

ADJUSTABLE-BOW BAR OR ROLL AXLE

Robert E. Staples, Lakeville, Mass., assignor to Mount Hope Machinery Company, Taunton, Mass.

Continuation-in-part of Ser. No. 365,055, May 30, 1973, abandoned. This application May 6, 1974, Ser. No. 467,151
Int. Cl.² B65H 17/20
U.S. Cl. 226—192 13 Claims



1. An adjustable-bow device having an arcuate outer surface portion adapted for wrapping by an indefinite length of sheet material wrapped partially thereabout, said device comprising a hollow cylindrical shell having a major longitudinal axis, and means for supporting said shell with a predetermined angular orientation;

first means for applying adjustable longitudinal stress to said shell along a first axis parallel to and spaced apart from said major axis, said first stress-applying means being constructed and arranged to bow said shell parallel to a first plane defined by said first axis and said major axis;

said shell being subject to a resultant force applied to said shell and lying in a second plane defined by said major axis and a second axis parallel to and spaced apart from said major axis, said resultant force tending to induce undesired curvature in said shell parallel to said second plane;

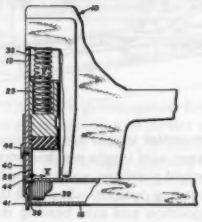
and second means constructed and arranged for applying adjustable longitudinal stress to said shell in said second plane and in opposition to said resultant force to remove said undesired curvature from said shell.

3,940,044

FASTENER DRIVER WITH SAFETY DEVICE

Gabriel M. LaPointe, Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Filed Oct. 15, 1974, Ser. No. 514,850
Int. Cl.² B25C 5/06
U.S. Cl. 227—8 4 Claims



1. A driver for a series of fasteners, comprising

a. a housing having a handle and a fastener exit,

b. a guide mounted in the housing presenting the fasteners seriatim to the said fastener exit,

c. means mounted in the housing for driving a fastener through the exit, the said means including a spring-loaded hammer with a driver blade slidable toward and away from the exit and a lever provided to lift the hammer and then release it for the driving operation, the driver blade being provided with a median slot, and

d. a safety device mounted on the housing and normally inhibiting the driving of a fastener but allowing it when the exit is pressed against a surface, the safety device including a finger extending away from the housing adjacent the exit and movable by movement of the housing toward and away from the surface, the finger being biased by a spring into a normally-extended position where it inhibits the driving of a fastener, but can be moved into a retracted position by contact with the surface, in which position it allows the driving of the fastener, the safety device having an abutment that extends through the driver blade slot for engagement in the inhibiting position with the leading end of the series of fasteners, the slot being of sufficient size that the abutment does not interfere with the movement of the hammer and the driving blade.

3,940,045

MANUALLY POSITIONABLE WORK ELEMENT

William G. A. Verwey, Phoenix, Md., assignor to Precision Industries, Inc., Baltimore, Md.

Filed Oct. 2, 1974, Ser. No. 511,497
Int. Cl.² B27F 7/02
U.S. Cl. 227—101 11 Claims

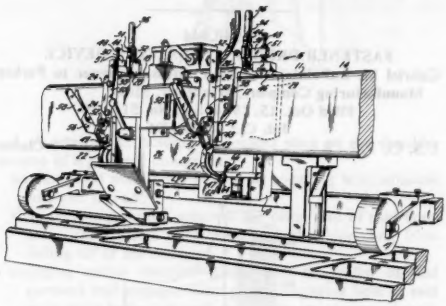
1. Apparatus for positioning a work element on a support rail, comprising, in combination,

at least one carriage adapted to be movably mounted on said support rail said carriage including a top member

adapted to be supported on said support rail, and at least one side surface member connected to said top member and depending adjacent said support rail, so that said work element may depend therefrom;

bearing means operably connected to said carriage and adjustable between engaging and retracted positions, said bearing means adapted to contact said support rail when in its engaging position and facilitate movement of said carriage along said rail;

means for selectively positioning said bearing means between engaging and retracted positions, said means com-



prising over-center toggle mechanisms connected to said bearing means, said toggle mechanisms movable between first and second positions, so that said bearing means may be in its engaging position when said toggle mechanism is in its first position and said bearing means may be in its retracted position when said toggle mechanism is in its second position; and

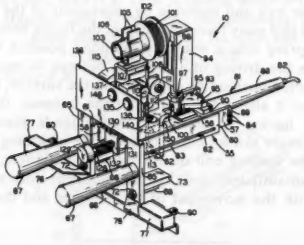
means for preventing the advance of said carriage along said support rail when said bearing means is in its retracted position, said means being adjustably connected to said carriage and adapted to engage said support rail.

3,940,046

SOLDERING APPARATUS

Robert W. Fern, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Mar. 20, 1974, Ser. No. 452,985
Int. Cl.² B23K *3/00, 3/06*
U.S. Cl. 228—8 **15 Claims**



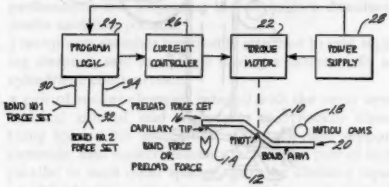
1. A soldering apparatus comprising: a frame, a soldering iron having a tip, means mounting said soldering iron on said frame for pivotal movement relative thereto in an arcuate path between a position of rest and a position of use, a supply of solder in strip form mounted on said frame, means intermittently feeding an increment of said solder strip into said arcuate path of travel in spaced relation to said soldering iron tip when disposed in said position of rest, and means for actuating said soldering iron to swing the tip thereof into engagement with said solder strip and sever said increment therefrom for delivery to said position of use.

3,940,047

BONDING APPARATUS UTILIZING PIVOTALLY MOUNTED BONDING ARM

Joseph L. Laub, Claremont, and David W. Steinmeier, II, Temple City, both of Calif., assignors to Unitek Corporation, Monrovia, Calif.

Filed Jan. 16, 1974, Ser. No. 433,662
Int. Cl.² B23K *1/00*
U.S. Cl. 228—32 **9 Claims**



1. In a bonding apparatus, the improvement comprising

a bonding arm having a bonding tool attached at one end thereof;

electromechanical means operatively linked to the bonding arm for applying a variable amount of force to the bonding arm, the amount of force applied being proportional to the electrical energy supplied to the electromechanical means;

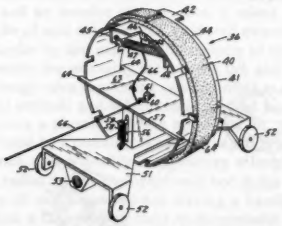
input means electrically connected to the electromechanical means for controlling the amount of electrical energy to be supplied to the electromechanical means, the input means comprising a plurality of adjustable energizing electric current sources selectively connectable to the electromechanical means, the plurality of sources including a first source for controlling the amount of force applied to the bonding arm by the electromechanical means when the bonding tool is in contact with a bonding location.

3,940,048

DEVICE FOR BACKING BUTT-WELDS BETWEEN TUBES

James H. Casey, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 21, 1975, Ser. No. 542,713
Int. Cl.² B23K *5/22*
U.S. Cl. 228—50 **6 Claims**



1. A backing device useful during fusion butt-welding between the ends of two tubular members having similar curvilinear inner surfaces, said device comprising:

a thin flexible support strip having overlapped end portions to provide an arcuate outer peripheral surface;

means guiding said overlapping end portions for relative longitudinal sliding movement to change the peripheral circumference of said support strip;

a strip of flexible refractory material comprising inorganic particles bound together with a flexible organic binder adapted to have a length dimension which is about the

same as that of the inner circumference of the tubular members;

means for securing said strip of refractory material on the periphery of said support strip; and

means adapted for positioning said end portions to press said strip of refractory material into engagement with the inner surfaces of said butted tubes.

3,940,049

PROCESS FOR WELDING EXPLOSIVE-CLAD METAL SHEETS

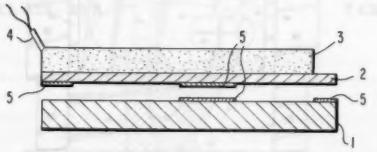
Ulf Richter, Burbach-Wurgendorf, and Antonius Korves, Ahlen, Westphalia, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft and Jacob and Korves GmbH, both of, Germany

Filed May 31, 1973, Ser. No. 365,407

Claims priority, application Germany, May 31, 1972, 2226484

Int. Cl.² B23K *31/02*

U.S. Cl. 228—107 **34 Claims**



1. In a process for joining an explosive-clad metal sheet composed of a base metal layer and a cladding metal layer to another element by welding, the improvement comprising carrying out explosive cladding to form said explosive-clad metal sheet in such a way that facing sections of said base metal layer and said cladding metal layer are unbonded in those portions of the explosive-clad metal sheet which will be welded to said element, and thereafter joining said element to the cladding metal layer of said explosive-clad metal sheet by welding only to portions of the cladding metal layer of said explosive-clad metal sheet in which said base metal layer and said cladding metal layer are unbonded.

3,940,050

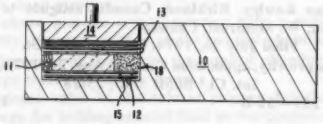
METHOD OF JOINING DIAMOND TO METAL

Donald R. Johnson, and James R. Sawers, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 333,144, Feb. 16, 1973, Pat. No. 3,856,480. This application Oct. 4, 1974, Ser. No. 512,044

Int. Cl.² B23K *31/02*

U.S. Cl. 228—122 **5 Claims**



1. In a process, for joining a diamond to a metal shank, of the type comprising the steps of applying an alloy selected from the group consisting of gold-tantalum alloys containing from about 1 to about 25 percent by weight of tantalum, and gold-niobium alloys containing from about 1 to about 10 percent by weight of niobium to opposing surfaces of said diamond and said metal shank, and melting said alloy in an inert atmosphere; the improvement wherein said process proceeds by placing a first layer of said alloy and then said diamond in a depression formed in said metal shank, filling the space around said diamond with an inert powdered material, covering said diamond and said powdered material with a second layer of said alloy, and clamping the above constituents in place with a metal cap using sufficient force to prevent movement of said diamond during the melting of said alloy.

3,940,051

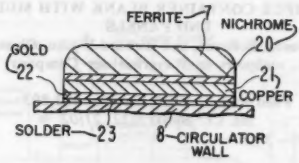
BONDING OF FERRITE TO METAL FOR HIGH-POWER MICROWAVE APPLICATIONS

Victor A. Vaguine, Palo Alto, and Dennis R. Nichols, San Jose, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 337,059, March 1, 1974, Pat. No. 3,873,944. This application Oct. 8, 1974, Ser. No. 513,195

Int. Cl.² B23K *1/20*

U.S. Cl. 228—208 **11 Claims**



1. A method of bonding a gyromagnetic ferrite button for causing nonreciprocal transmission of power within a microwave circulator to a metal wall of said circulator, said method comprising the steps of depositing a plurality of metal layers in succession upon a portion of said button and then soldering said metallized button to said metal wall.

3,940,052

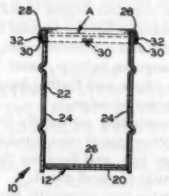
UNITARY CONTAINER LINER

Vincent Kenneth McHugh, 4533 Granville Court, Toledo, Ohio 43615

Continuation-in-part of Ser. No. 195,193, Nov. 3, 1971, abandoned. This application Apr. 29, 1974, Ser. No. 465,296

Int. Cl.² B65D *5/40, 25/14*

U.S. Cl. 229—14 BE **3 Claims**



1. A unitary replaceable liner for a liquid container having side walls and a bottom, the liner being adapted to accommodate suction withdrawal and mechanical agitation of liquid contained thereby in the vicinity of the container bottom and comprising:

a pliant collapsible tubular portion having an opening at one end thereof;

a closed end wall having the pliant collapsible character of said tubular portion at the end of said tubular portion opposite said opening;

a base including an internal stiffener of a generally planar form independent of said tubular portion, and bonded generally around the periphery of said base to the inside of said closed end of said tubular portion, said internal stiffener conforming to the bottom of the container and providing clearance between said liner around the periphery of said internal stiffener and the side walls of the

container for passage into the container of said liner, said tubular portion being conformable to the interior side walls of the container, said entire internal liner being stiff and non-collapsible under the forces imposed in suction withdrawal and mechanical agitation of the liquid contained by said liner throughout the planar dimension thereof to maintain said tubular portion in conformity with the side wall of the container and prevent collapse of said liner in the vicinity of the container bottom, said liner being impervious and inert to the liquid in the container to maintain separation between the liquid and the container; and

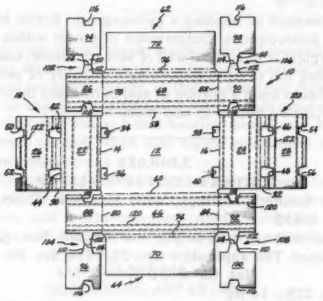
an external stiffener bonded to said closed end over substantially the entire periphery of said base and in general registry with said internal stiffener.

3,940,053

SINGLE-PIECE CONTAINER BLANK WITH MULTI-PLY END PANELS

Jack D. Putman, Bellevue, and Richard Wytko, Olympia, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Aug. 1, 1974, Ser. No. 493,803
Int. Cl.² B65D *5/22, 21/02*
U.S. Cl. 229—34 R **3 Claims**



1. A single-piece containerboard blank of the type that is erectable into a container having at least two side panels, two multi-ply end panels, and a bottom panel, comprising:

a generally rectangular bottom panel having longitudinal and transverse edges, and further having a pair of cutouts along each transverse edge,

a first end wall extending outwardly from each transverse edge of said bottom panel connected to said bottom panel through a hinge line, and forming the outermost wall in each of said multi-ply end panels,

a first side wall extending outwardly from each longitudinal edge of said bottom panel connected to said bottom panel through a hinge line and forming the outer wall in each of said side panels,

first split interior end walls extending outwardly from each transverse edge of said first side walls having a longitudinal dimension that is equal to or less than one half of the transverse dimension of said first end walls and further having a cutout along the bottom longitudinal edge positioned so as to be in alignment with said plural cutouts in said bottom panel,

second split interior end walls extending outwardly in the transverse direction from the outer longitudinal edge of each of said first split interior end walls with said corresponding first and second split interior end walls being connected together by stacking tab means and with said second split interior end walls having cutouts along the outer longitudinal edges positioned so as to be in alignment with said plural cutouts in said bottom panel and having approximately the same longitudinal dimension as said first split interior end walls, and

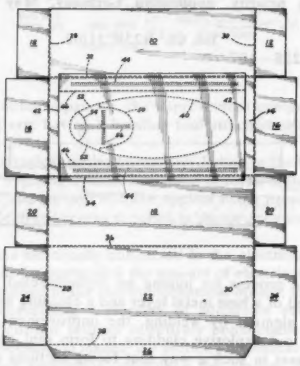
said stacking tab means being comprised of two tab portions extending outwardly from opposing respective split interior end walls and hingedly connected together such that, when said container is erected, said stacking tabs will extend upwardly from the top edges of said multi-ply end panels.

3,940,054

TISSUE CARTON

Henry R. Goebel, and Joseph Flynn, both of Camarillo, Calif., assignors to Western Kraft Corporation, Camarillo, Calif.

Filed Nov. 15, 1974, Ser. No. 523,969
Int. Cl.² B65D *17/16*
U.S. Cl. 229—51 D **4 Claims**



1. A tissue carton comprising:

a. a blank of foldable carton material including top, bottom, and side panels and a plurality of end flaps connected thereto and foldable into carton-forming relation,

b. the top panel having an opening dimensioned to pass tissues contained in the carton,

c. a piece of transparent film material extending across the opening and secured to the underside of the top panel outwardly of the peripheral margin of the opening,

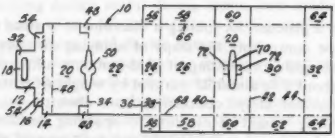
d. a pull tab for the piece of transparent film material comprising a perforation-defined segment of the top panel secured to the piece of transparent film material, the perforations defining said pull tab segment registering with and forming a continuation of the peripheral margin of the top panel opening.

3,940,055

END LOAD CONTAINER

Cecil Alan Rowley, Kirkland, Canada, assignor to Domtar Limited, W. Montreal, Canada

Filed July 26, 1974, Ser. No. 492,036
Claims priority, application Canada, Aug. 24, 1971, 121263
Int. Cl.² B65D *5/46, 25/28*
U.S. Cl. 229—52 B **12 Claims**



1. A blank adapted to form an interior partition within a carton and an extensible handle member, said blank compris-

ing a handle panel having a hand section and abutment flanges, a securing panel, a line of weakness connecting said handle panel to said securing panel to permit said handle panel to be torn therefrom, an envelope panel, a partition panel, said securing panel and said partition panel being connected to said envelope panel by substantially parallel fold lines positioned one on each end of said envelope panel and a handle opening along said fold line connection between said partition panel and said envelope panel, said opening permitting the handle section to be pulled through said opening into a carrying position wherein said flanges engage said fold line connection between said envelope and partition panels when said blank is formed into an interior partition.

3,940,056

SELF-CLEANING CENTRIFUGE DRUM

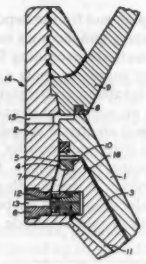
Reinhard Schmidt, Oelde, Germany, assignor to Westfalia Separator AG, Oelde, Germany

Filed Feb. 27, 1974, Ser. No. 446,450

Claims priority, application Germany, Feb. 27, 1973, 2309647

Int. Cl.² B04B 1/14

U.S. Cl. 233—20 A 7 Claims



1. In a centrifugal separator comprising

a. a rotatably mounted separator drum having at least one sludge discharge passageway disposed at the radially outward periphery of the drum,

b. a piston valve disposed within the drum extending from adjacent the drum axis to adjacent the radially outward periphery of the drum, and being movable vertically to open and close the sludge discharge passageway(s) for desludging,

c. a closing chamber in the drum disposed outwardly of the piston valve extending from adjacent the axis of the drum to adjacent the radially outward periphery thereof, defined in part by the axially outward side of the piston valve, for receiving and discharging control fluid for, respectively, forcing the piston valve to the closed position and relieving force initiating the moving of the valve to its open position,

d. a release passage communicating with a radially outwardly disposed portion of the control chamber for receiving control fluid from the control chamber for discharge thereof from the drum,

e. a release valve in the release passage for closing the passage for holding control fluid in the control chamber and opening the passage for discharge of control fluid from the control chamber,

the improvement which comprises:

f. an annular chamber in the drum concentric with the drum axis and interposed between the closing chamber and the release passage for receiving control fluid from a peripheral portion of the control chamber and conveying the control fluid to the release passage, passageway means between said peripheral portion of the control chamber and the annular chamber such that with the release valve open, control fluid leaves the closing chamber through said passageway means so that the level of the control fluid is maintained concentric with the drum axis as the level in the control chamber moves radially outwardly so that tilting of the piston valve during emptying of the control chamber is prevented.

3,940,057

PRESSURE COOKING APPARATUS

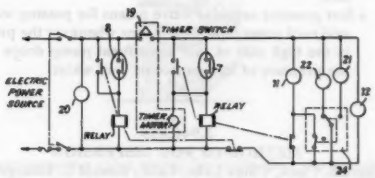
Takafumi Oya, Kadoma; Yoshiyuki Kashiwagi, Kadoma, and Yoshihiro Kariya, Toyonaka, all of Japan, assignors to Rinnai Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 29, 1974, Ser. No. 518,866

Claims priority, application Japan, Oct. 26, 1973, 48-122319; Oct. 26, 1973, 48-122318

Int. Cl.² A23L 1/01; F24C 3/12

U.S. Cl. 236—20 3 Claims



1. Pressure cooking apparatus using a pressure container comprising sensing means for sensing when a pressure or a temperature within the pressure container reaches a set value upon heating of the pressure container, a timer means connected to the sensing means to be started upon energization thereof and to finish the cooking after the passage of a set time on the timer means, a heating means for heating the pressure container, and means coupled to the heating means and timer means for stopping the operation of the heating means after the passage of the set time of the timer means; said heating means comprising a gas burner, a conduit connected to said gas burner, a first control valve and a second control valve connected in series with each other in said gas conduit and a bypass passage small in diameter relative to said conduit connected in parallel with said first control valve, such that the first control valve is closed when the sensing means operates and the timer means is activated, and the second control valve is closed at the expiration of the operation of the timer means.

3,940,058

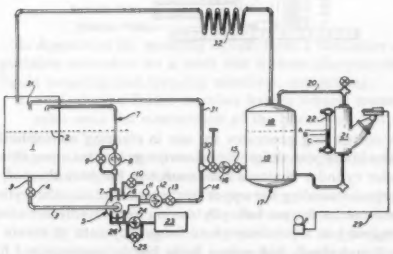
STEAM GENERATING SYSTEM INCLUDING MEANS FOR REINITIATING THE OPERATION OF A STEAM BOUND BOILER FEED PUMP

Orlin R. Norris, 263 Little St., Belleville, N.J. 07109

Filed Oct. 7, 1974, Ser. No. 512,498

Int. Cl.² F24D 1/02

U.S. Cl. 237—9 R 5 Claims



1. An improved steam boiler system comprising:

a steam boiler;
a centrifugal pump for pumping water into said boiler, said pump having a low pressure input side and a high pressure output side;
a boiler feed line connecting said pump to said boiler;
a condensate tank for supplying water to said centrifugal pump;
a suction line connecting said condensate tank to said pump;
a heating system for passing steam from said boiler back to said condensate tank; and,
an automatic cool water injecting means for injecting cool water into said pump when said pump is in the steam bound condition, said automatic cool water injection means including:
a source of relatively cool water;
a cool water input line means connected between said source of cool water and the high side of said pump; and,
a first pressure sensitive valve means for passing water to said cool water input line means whenever the pressure in the high side of said centrifugal pump drops below the pressure of said source of cool water.

3,940,059

METHOD OF FOG DISPERSION

Richard S. Clark, China Lake, Calif.; Ronald L. Lininger, Ann Arbor, Mich., and David W. Reed, China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 4, 1971, Ser. No. 150,205
Int. Cl.² E01H *13/00*
U.S. Cl. 239—2 R **4 Claims**

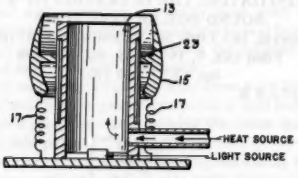
1. A method for dispersing a warm fog which comprises spraying into said fog a composition comprising, on a molar ratio, about 1 mole urea and about 1 mole ammonium nitrate, with from zero to 5 moles of water, wherein the amount of water for said composition comprising two said compounds is at least one-half mole.

3,940,060

VORTEX RING GENERATOR

Hermann Viets, 2511 S. Patterson Blvd., Dayton, Ohio 45409

Filed Aug. 23, 1974, Ser. No. 499,939
Int. Cl.² E01H *13/00*
U.S. Cl. 239—14 **6 Claims**



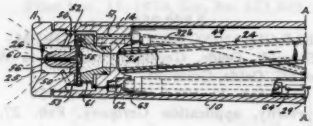
1. A vortex ring generator for use in clearing atmospheric obstacles in the path thereof, said vortex generator comprising a circular cylinder having a heat source in the base thereof, a ringwing surrounding the upper portion of said circular cylinder, and means for periodically raising and rapidly lowering said ringwing at a predetermined frequency rate to create a vortex therebehind, said vortex being highly concentrated for rapid upward movement thereby clearing the atmosphere for relatively great distances above the vortex generator.

3,940,061

ELECTROSTATIC SPRAY GUN FOR POWDER COATING MATERIAL

James J. Gimple; Charles T. Lasley, and Rogers, Daniel M., all of Toledo, Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Sept. 16, 1974, Ser. No. 506,200
Int. Cl.² B05B *5/02, 1/28*
U.S. Cl. 239—15 **5 Claims**



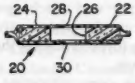
1. An electrostatic spray gun for the deposition of powdered coating material, said spray gun having a support means for an axial electrode, said electrode extending forwardly from said support means, a power supply to apply a charging voltage to said axial electrode to create an electrostatic field thereabout, means to discharge an air supported stream of powder coaxially with and around said electrode support means, means to supply an air stream to shape said powder stream to a desired configuration, and means to supply a flow of air axially through said support means in surrounding shielding relationship to said charging electrode, said air being caused to flow rapidly along the length of said electrode.

3,940,062

MOISTURE POD FOR THE PRESERVATION OF PERISHABLE COMESTIBLES

Don E. Rainey, 4525 NE. 21st Ave., Fort Lauderdale, Fla. 33308

Continuation of Ser. No. 394,809, Sept. 6, 1973, abandoned, which is a division of Ser. No. 280,746, Aug. 15, 1972, abandoned. This application Aug. 22, 1974, Ser. No. 499,857
Int. Cl.² A24F *25/00*
U.S. Cl. 239—56 **5 Claims**

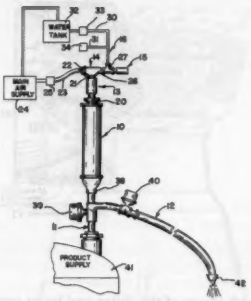


1. A moisture pod for use in a package of a perishable comestible product, consisting of:
a. a water-containing, flexible, porous reservoir element of a water-absorbing material having an aperture formed therein and extending entirely therethrough; and
b. a sheath of flexible, moisture-impervious film contiguous about and in closely enveloping relationship with said reservoir element, said sheath having an opening in at least one face thereof, said opening being smaller in diameter than said aperture and registering therewith, thereby permitting evolution or evaporation of water vapor from said reservoir element to the exterior of said sheath.

3,940,063
APPARATUS FOR SPRAY-COATING PRODUCT ONTO AN ARTICLE

Jon B. Baumgartner, Lisle, and James J. Moran, Orland Park, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed May 30, 1975, Ser. No. 582,145
Int. Cl.² B05B *15/02*; B65B *1/04*
U.S. Cl. 239—70 **10 Claims**



1. Apparatus for spray-coating a product onto an article comprising, a container adapted to be filled and emptied with product to effect spraying a measured amount of product onto an article, a fill and empty port at the bottom of the container, a supply of product, a spray line having a spray nozzle, first means for selectively interconnecting said supply and said fill and empty port, second means for selectively interconnecting the spray line and said fill and empty port, an air port at the upper end of the container, product level control means adjacent the air port responding to a predetermined product level for closing the air port when the product level in the container reaches said predetermined level, and a venturi eductor connected to the product level control means having an air inlet connected to an air supply and an outlet connected to a control valve for selectively opening and closing the outlet to atmosphere and creating negative and positive pressure conditions in the container, whereby said container is filled during the negative pressure condition and emptied during the positive pressure condition.

3,940,064
ATOMIZING EQUIPMENTS FOR ANESTHETIC LIQUID COMPOUNDS

Kentaro Takaoka, Avenida Bosque da Saude, 519, Sao Paulo, Brazil

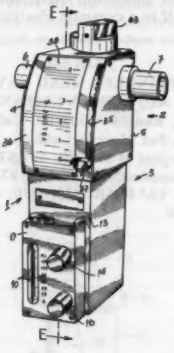
Filed Feb. 10, 1975, Ser. No. 548,783
Claims priority, application Brazil, Aug. 19, 1974, 6804
Int. Cl.² B05B *7/26*; B67D *5/38*
U.S. Cl. 239—74 **8 Claims**

1. A vaporizing device useful for the carrying of liquid anesthesia by a carrier gas matrix, said device of the type utilizing two separate streams of carrier gas with the first of said streams not immediately contacting said liquid and the second of said streams contacting and carrying said liquid within said stream to a final mixing chamber in which said second stream is reunited and mixed with said first stream and the control of the amount of each of the streams helps to determine the amount of liquid anesthesia provided to the patient, the device comprising:

a. a body shaped to allow for abutment at the sides of said body by another said device, said body including removable side panels, an upper section and a lower section;

b. said lower section of said body defining a chamber for contacting mixing said anesthetic liquid with said second stream, said lower section including means for introduction of said liquid into said chamber, and a second conduit means including valve means for the introduction of said second stream;

c. other conduit means for carrying said anesthetic enriched second stream into said final mixing chamber, said means including a conduit which interconnects said chambers



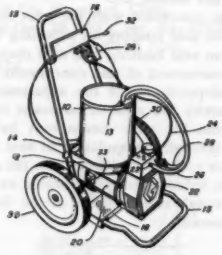
and separate valve means for controlling the amount of said enriched second stream entering said final chamber;

d. said upper section including first stream conduit means for carrying said first stream to said final mixing chamber including a valve means for controlling the amount of said first stream entering said chamber.

3,940,065
PORTABLE SPRAYING APPARATUS

Lyle A. Ware, Bloomington; Dennis J. Sundelius, St. Paul, and Marlin R. Melquist, Spring Lake Park, all of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed Mar. 14, 1975, Ser. No. 558,209
Int. Cl.² B05B *5/08*, *9/043*, *15/04*, *3/18*
U.S. Cl. 239—146 **6 Claims**



1. Apparatus for spraying liquids from a container and for portable relocation to a work site without disconnecting the liquid coupling and spraying members, comprising:

a. an L-shaped frame member having wheels mounted on axles near the intersection of the horizontal and vertical frame legs;

b. a motor and pump assembly rigidly attached to the horizontal leg of said frame member;

c. a liquid container shelf pivotally mounted along said frame member vertical leg and supported in a substantially horizontal position by said motor and pump assembly, whereby said shelf is elevated above said pump assembly and has its load-bearing center forward of said wheel axles;

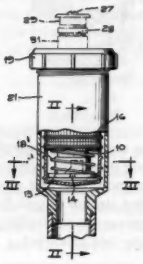
d. a suction hose and a recirculating hose attached to said motor and pump assembly and having means for attachment to said liquid container;
e. spraying means, attached to said motor and pump assrmbly, for delivering sprayed liquid pumped by said motor and pump assembly; and
f. electric circuit means for interconnecting said spraying container shelf to a common electrical potential.

3,940,066

POP-UP SPRINKLER HEAD HAVING FLOW ADJUSTMENT MEANS

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Continuation-in-part of Ser. No. 487,578, July 11, 1974, abandoned. This application Oct. 16, 1974, Ser. No. 515,218
Int. Cl.² B05B *1/16, 1/30, 15/10*
U.S. Cl. 239—204 **13 Claims**



1. In an improved versatility sprinkler for varying the flow rate of fluid through a sprinkler head having a housing for receiving water under pressure and riser means mounted therein, said riser means having an inlet end within said housing and a discharge end, exteriorly of said housing, the improvement comprising:
first means formed at the discharge end of said riser means for adjusting the area of coverage of the fluid discharged from said riser means; and
second means associated with the inlet end of said riser means within said housing for adjusting the rate of flow of fluid from said housing into said riser in response to rotational movement of said riser means relative to said housing independently of the adjustment of said first means whereby the area of coverage of the fluid discharged from the riser means may be independently adjustable through manipulation of said first means and the flow rate of fluid discharged into the selected area of coverage is independently adjustable exteriorly of said housing through manipulation of the discharge end of said riser means.

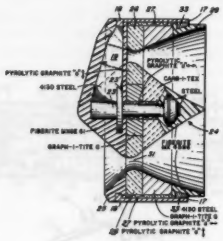
3,940,067

AXISYMMETRICAL ANNULAR PLUG NOZZLE

Charles C. Cherry, McGregor, and Lewis C. King, Dallas, both of Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1969, Ser. No. 798,256
Int. Cl.² B63H *11/00*
U.S. Cl. 239—265.11 **9 Claims**

1. A composite annular nozzle for rocket motors comprising:
a steel shell forming a can-like body;
tripod arms secured at their free extremities to the shell;
a steel pin secured to the center of the tripod arms and extending aft substantially concentric with the shell body;
contoured inner walls formed of sections of materials other than steel secured to the inner wall of the shell body, said inner wall forming the outer contoured surface of the nozzle;
sections formed of a material other than steel, which when assembled on the center pin form a substantially cone shaped centerbody, the contoured outer shape of the centerbody forming the inner walls of the nozzle;



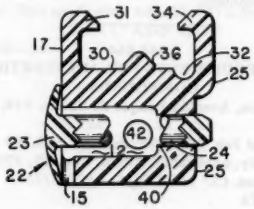
wherein the aft insert of the outer and inner contoured walls is formed of silica phenolic molding compound;
whereby an annular throat section is formed at the portion of narrowest opening between the outer wall and the inner wall of the nozzle.

3,940,068

WINDSHIELD WIPER ARM WITH WATER DISTRIBUTION MEANS

Michael G. Mohnach, Merrillville, and John J. Plisky, Munster, both of Ind., assignors to The Anderson Company, Gary, Ind.

Filed Sept. 13, 1974, Ser. No. 505,743
Int. Cl.² B05B *1/10;* **B60S** *1/46*
U.S. Cl. 239—284 R **3 Claims**



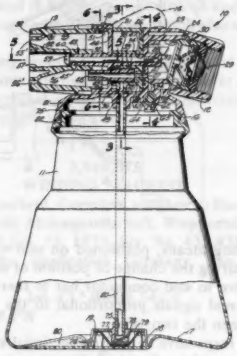
1. A method for sealing a washer jet assembly having a housing with a distribution cavity and a reduced diameter opening aligned with said distribution cavity, a cover button having an integrally formed head portion and shank portion with the end of the shank portion remote from the head portion being inserted through the distribution cavity and forced through said reduced diameter opening, said head portion having a concave-shaped surface on the shank side thereof with said concave-shaped surface being seated against an open end of said distribution cavity, said head portion being pressed against said housing to flatten said concave shape to a flat shape, and the remote end of said shank portion being upset to form a flange to secure said cover button flat against said housing.

3,940,069

SPRAY APPARATUS

Rudolph M. Gunzel, Jr., San Marino; Donald R. James, West Covina, and Tony Radecki, Altadena, all of Calif., assignors to Melko, Incorporated, Los Angeles, Calif.

Filed Sept. 30, 1974, Ser. No. 510,764
Int. Cl.² B05B 7/04, 7/30, 1/16
U.S. Cl. 239—318 26 Claims



1. Apparatus for mixing a liquid with pressurized water and providing a spray thereof, comprising:

an open-topped container for receiving a quantity of said liquid:

a cap carried by said container including means for connecting the cap to a supply of pressurized water with a water inlet opening in communication with said pressurized water and further having a port communicating with the container interior;

a cylindrical body rotatably mounted on said cap including first and second passages extending through said body, arranged to be individually aligned with said water inlet opening at respective different positions of rotation, said body having walls defining first and second openings interconnecting the respective first and second passages to the body exterior and so located as to align with the port in said cap when the respective passage is aligned with the water inlet opening;

a nozzle interconnected with said cylindrical body for ejecting a spray; and

a single, open-ended, hollow tube carried by said cap having one open end interconnected with said port in said cap and the other open end extending into said container, said tube other end terminating in means having an opening for receiving liquid from the container and said opening in said means having a lesser sectional area than that of the tube one open end or that of the port in said cap.

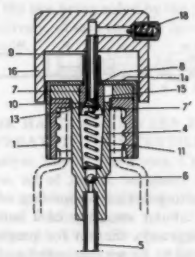
3,940,070

ATOMISER HAVING A PLUNGER TUBE

Michel Boris, Paris, France, assignor to Societe Technique de Pulverisation, Paris, France

Filed Aug. 16, 1974, Ser. No. 498,068
Claims priority, application France, Aug. 16, 1973, 73.30656
Int. Cl.² B05B 9/043
U.S. Cl. 239—333 4 Claims

1. In an atomiser comprising a plunger tube, a pump chamber connected to the plunger tube by means of a check valve, a piston having a lip slidably mounted in that chamber, a tube slidably mounted in that piston and operatively connected to the latter so that, when the tube is moved axially, it drives the piston, a control button carrying a nozzle connecting with the tube and capable of moving the latter when the button is pressed, a valve carried on the end of the tube opposite the button and capable of being applied on a seat at the lip end of the piston, the tube containing in proximity to said lip end at least one hole opening inside the piston, and a spring which is inserted between the valve and the bottom of the chamber and tends to apply the valve on its seat and, to bring the piston into a rest position in which it blocks a free air opening of the



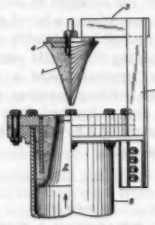
container holding the liquid to be sprayed, the improvement comprising: the pump chamber being of the shape of a truncated cone the surface of which is plane, the lip of the piston being of decreasing crosssection as it extends from the valve seat to the free end of the piston, the free end being situated at the larger base of the pump chamber in its rest position said free end having an outside diameter no less than the inside diameter of the larger base of the pump chamber and the free end being radially compressed by the pump chamber as it is moved axially into the pump chamber.

3,940,071

SPRAY NOZZLE FOR DISPERSING SAND SLURRY

Marvin Stevens Lassiter, Sr., Lakeland, Fla., assignor to American Cyanamid Co., Stamford, Conn.

Filed Oct. 29, 1973, Ser. No. 410,841
Int. Cl.² B05B 1/26
U.S. Cl. 239—524 2 Claims



1. A spray nozzle unit comprising:

a nozzle mounted in a pipe tee for dispersing a sand slurry upward

a cone deflector with a configuration of a Tractrix curve mounted with brackets above the nozzle on a vertical arm which connects at its lower end to the pipe tee and

pressure means for propelling the sand slurry through the nozzle and against and away from the cone to cause a circular spray of the sand slurry.

3,940,072
SPRAY-EJECTING DEVICE

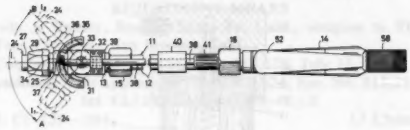
Yasuo Ishikawa, Yokohama, and Masahiro Ito, Tokyo, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Oct. 8, 1974, Ser. No. 513,170

Claims priority, application Japan, Oct. 11, 1973, 48-113201

Int. Cl.² B05B 15/08

U.S. Cl. 239—587 **3 Claims**



1. A spray-ejecting device comprising:

an elongated tubular structure of a hand supporting type having passageways therein for passing therethrough a spray material to be spray-ejected and having a forward end and a rear end; a nozzle rotatably mounted on the forward end of the tubular structure in a manner to communicate with the passageways in the tubular structure and to be rotatable so that the direction of the centerline thereof is angularly adjustable relative to the centerline of the tubular structure, said nozzle being operable to spray-eject said spray material;

a valve mechanism for selectively shutting off and permitting supply of said spray material through the passageways of the tubular structure to the nozzle;

valve control means mounted in the vicinity of the rear end of the tubular structure for controlling the operation of the valve mechanism; and

adjustment means for rotating the nozzle relative to the tubular structure thereby to adjust the direction of spray-ejection from the nozzle,

said adjustment means comprising a rotatable knob in the vicinity of the valve control means, a rotatable shaft having front and rear ends, said knob being fixed to the rear end of said rotatable shaft, said shaft extending forwardly from said knob substantially parallel to the tubular structure to a position in the vicinity of said nozzle, and rotating means coupled to the forward end of said rotatable shaft for displacing the nozzle in rotation thereby to adjust the direction of spray-ejection from the nozzle in accordance with the rotation of the rotatable shaft, said rotating means comprising a bevel gear fixedly mounted on the forward end of the rotatable shaft, a holding member unitarily holding the nozzle and pivotally supported by the tubular structure, and a rack part integrally mounted on the holding member and having a planar arcuate shape and a toothed face corresponding to a planar development of a bevel gear in mesh with said first mentioned bevel gear.

3,940,073
APPARATUS FOR WRAPPING A COMPOUND-CURVED CONDUCTOR BAR

Jochen Haeusler, Nurnberg-Laufamholz; Manfred Schmirl, and Dietmar West, both of Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 12, 1974, Ser. No. 505,257

Claims priority, application Germany, Sept. 18, 1973, 2346965

Int. Cl.² H01F 11/04; D02G 3/36

U.S. Cl. 242—7.08 **11 Claims**

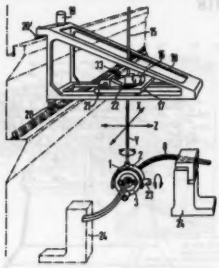
1. An apparatus for wrapping a compound-curved conductor bar with insulation material which comprises:

a. a winding head including,

i. a guide ring,

ii. a winding ring supported by said guide ring, said winding ring adapted to revolve within said guide ring,

iii. at least one roll, for carrying said insulation material, positioned on said winding ring, and



iv. sensing means, positioned on said winding head, for measuring the change of position of said winding head relative to said conductor bar to thereby provide correction al signals proportional to the relative position between the two; and

b. means responsive to said correctional signals for adjusting the position of said winding ring such that the plane of said winding ring is maintained substantially perpendicular to the center line of said bar.

3,940,074
DEVICE FOR DAMPING VIBRATIONS OF THE BOBBIN HOLDER

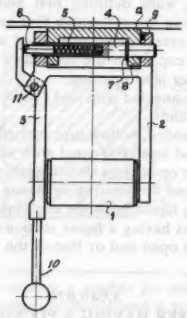
Jozef Laski, and Jan Pacholski, both of Lodz, Poland, assignors to Centralne Biuro Techniczne Przemyslu Maszyn Wlokienniczych, Lodz, Poland

Filed Feb. 1, 1974, Ser. No. 438,713

Claims priority, application Poland, Feb. 7, 1973, 49914

Int. Cl.² B65H 54/42, 49/20

U.S. Cl. 242—18 DD **2 Claims**



1. A yarn cross winding machine comprising, in combination:

a. a friction driven bobbin having a winding surface area;

b. a machine frame member;

c. a shaft having an axis and supported by said machine frame member, said shaft having one end which defines a recess therein;

d. a bobbin holder supported by said shaft for pivotal and axial movement relative thereto, comprising first and second arms for swingably supporting said bobbin, wherein said second arm is one end of a lever pivotably

mounted to said first arm about an axis extending perpendicularly to said axis of said shaft; and

e. means for resiliently clamping said bobbin between said arms and for simultaneously urging a portion of said first arm against said machine frame member, thereby causing a friction generated force to dampen vibrations of said bobbin holder comprising:

a spring disposed within said recess,

a pin, slidably disposed within said recess, having one end upon which a force is exerted by said spring, and an opposite end in sliding contact with an end of said lever opposite said end of said lever which also is said second arm, and

a stopper ring immovably mounted on said shaft, which abuts against said machine frame member and prevents axial movement of said shaft by the force exerted by said spring upon said shaft.

3,940,075

WINDING MACHINE

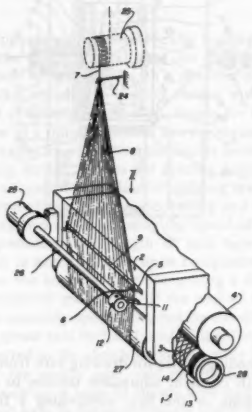
Erich Lenk, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Jan. 15, 1974, Ser. No. 433,435

Claims priority, application Germany, Jan. 17, 1973, 2302095

Int. Cl.² B65H 54/34

U.S. Cl. 242—18 PW 8 Claims



1. In a winding machine the combination including:

a traversing thread guide of substantially flat triangular shape, said guide extending into the thread traversal plane from one side thereof, being mounted for rectilinear reciprocating movement only, along a path parallel to said plane, having a thread-guiding slot opening into the thread traversal plane and two external side faces slanted towards the mouth of said slot, one of said slanted side faces being shorter than the other;

an auxiliary thread guide for lifting the thread out of said slot to form a reserve zone axially adjacent to the bobbin being wound, said auxiliary thread guide having an arm extending into the thread traversal plane from the opposite side thereof, and

means for moving said auxiliary thread guide, along a path extending on said opposite side at least partially parallel to the path of the traversing thread guide, into the thread reserve zone at a speed lower than the reciprocating speed of said traversing thread guide;

said arm of the auxiliary thread guide, with its free end, pointing at an acute angle in the direction of the thread reserve zone to provide a correspondingly slanted rear face, a correspondingly slanted front face and a recess at the root of said front face, said rear face being shaped so as to retain the thread in the slot of said traversing thread guide when the traversing thread guide, moving in the direction of said thread reserve zone, overtakes said auxiliary thread guide from the rear, and said front face being shaped so as to lift the thread out of said slot and capture it in said recess when the traversing thread guide, moving in the direction away from said thread reserve zone, passes said auxiliary thread guide from in front, and said retaining of the thread in the slot and lifting of the thread out of the slot being aided by the greater and lesser length, respectively, of said two side faces of said traversing thread guide.

3,940,076

APPARATUS FOR HANDLING A YARN END DURING A DONNING OPERATION ON A TEXTILE MACHINE

Takashi Kato, Kariya; Toshio Yoshizawa, Chiryu, and Yasuo Yamada, Kariya, all of Japan, assignors to Daiwa Boseki Kabushiki Kaisha and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, both of Osaka, Japan

Filed Apr. 11, 1974, Ser. No. 460,086

Claims priority, application Japan, Apr. 16, 1973, 48-42849; May 11, 1973, 48-52850; June 1, 1973, 48-62345

Int. Cl.² B65H 67/04

U.S. Cl. 242—18 R 15 Claims

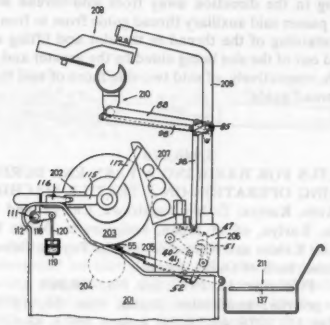
1. In an apparatus for doffing and donning in a textile machine having a spinning unit, a take up unit having a rotatably driven friction roller, a pivotably mounted cradle for releasably holding a bobbin in contact with said friction roller for rotating said bobbin with said friction roller, and delivery means mounted spaced from one side of said friction roller for continuously directing yarn from said spinning unit, whereby yarn from said spinning unit may be wound on a bobbin held in said cradle; the improvement wherein said cradle is manually pivotably movable toward and away from said friction roller, comprising a bobbin holder mounted in a fixed position with respect to said friction roller and including means for releasably holding fresh bobbins in the path of pivotal movement of said cradle away from said friction roller, said cradle having holding means for grasping a fresh bobbin held by said bobbin holder when said cradle is pivotally moved away from said friction roller, and means comprising a suction nozzle forming a temporary yarn passage, said suction nozzle being positioned on the same side of said friction roller as said delivery means to receive yarn from said delivery means and hold it out of contact with said friction roller, said friction roller and said bobbin holder being located on opposite sides of the yarn when the yarn is received by said suction means whereby, upon pivotal movement of said cradle from said bobbin holder toward said friction roller with a fresh bobbin held therein, yarn extending between said delivery means and said suction nozzle may be urged into contact with said friction roller for being wound on said fresh bobbin.

3,940,077

APPARATUS FOR AND A METHOD OF YARN DOFFING

Kenji Ohashi, Uji, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Aug. 6, 1973, Ser. No. 385,744
Int. Cl.² B65H *54/20, 67/04*
U.S. Cl. 242—35.5 A **6 Claims**



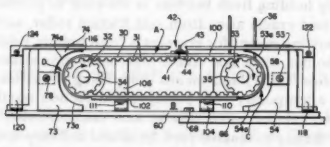
1. A doffing apparatus of an automatic winding machine having a frame, a plurality of winding units each carrying a package, conveying means to transport a full package and guiding drum means contacting the periphery of the package to drive the same, said doffing apparatus comprising guide plate means for guiding a full package to the conveying means, brake means engageable with the guiding drum means to stop the guiding drum means, means mounting the brake means adjacent the guiding plate in a position to be contacted and actuated by the guiding plate on movement of the guiding plate, means for moving the guiding plate to contact and actuate the brake means while the guiding drum means are still engaging a full package, cradle means supporting the package in contact with the guiding drum means, shutter plate means for opening the cradle means to release a full package, yarn transfer means mounted on said guide plate for transferring the yarn end connected with a full package to one end of the package, cutter means to cut said yarn end transferred by said yarn transfer means, and empty spool carrier means for carrying an empty spool to said cradle means to be supported by the cradle means.

3,940,078

BELT TRAVERSE AND GUIDE MECHANISM

William M. Bense, Barrington, and Thomas W. Perino, Johnston, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Aug. 12, 1974, Ser. No. 496,802
Int. Cl.² B65H *54/30*
U.S. Cl. 242—43 R **11 Claims**



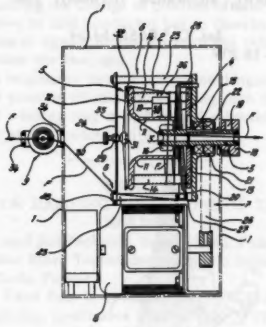
1. Apparatus for traversing a strand onto a winding package having a longitudinal face comprising, a continuous looped conveyor having a pair of straight-away portions and opposed return portions to form a looped path, strand guide means carried around said looped path by said conveyor for engaging a strand along the entire length of said looped path and to reciprocate said strand across the longitudinal face of said package, and means to prevent rotation of said strand guide means as said strand guide means moves around said looped path, said means comprising a cam follower means associated with said strand guide means, cam means for contacting said follower means at least during the return portions of the travel of the follower means about said looped path.

3,940,079

YARN FEEDING DEVICE WITH CONSTANT ADJUSTABLE TENSION, PARTICULARLY FOR FEEDING YARNS TO WEAVING AND KNITTING MACHINES AND DEVICES

Sergio Vella, Biella, Italy, assignor to Roj & Vella S.p.A., Biella, Italy

Filed Feb. 12, 1974, Ser. No. 441,864
Claims priority, application Italy, Feb. 12, 1973, 20286/73
Int. Cl.² B65H *51/20*
U.S. Cl. 242—47.12 **7 Claims**



1. A yarn feeding device for drawing yarn from a supply and feeding it with constant adjustable tension to a weaving or knitting machine or the like, comprising a frame, a fixed hollow body consisting of a cage supported by a hollow shaft mounted cantilevered on said frame and having an inner funnel-shaped guide member, the yarn coming from said supply being wound into turns around the cage to form thereon a yarn reserve, a rotating framework mounted on said hollow shaft on the outside of said fixed cage, means to rotate said framework, oscillating means on said fixed cage and oscillated by said rotating framework to advance the yarn turns forming said reserve on the cage means to adjust and keep uniform the amount of said reserve, brake means bearing yieldably against the cage to tension the yarn leaving the device, means to adjust the pressure with which the brake means bears against the cage, the yarn unwinding from said reserve passing between the brake means and the cage, and subsequently through the funnel-shaped member, before coming out of the device in the same direction of its inlet into the device itself, said brake means comprising at least one braking element, elastically pressed in an axial direction against a free outer edge of said cage by said rotating framework, said braking element comprising a ring and a set of elastic spokes converging into a central hub of the ring, and an adjustable screw on the rotating framework acting against said hub to press the braking ring against the cage, said screw being coaxial with the hollow shaft and freely rotatable in said hub.

3,940,080

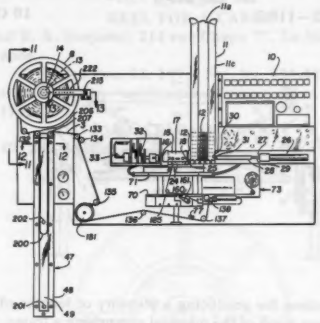
AUTOMATIC TAPE LOADING APPARATUS FOR CASSETTES AND THE LIKE

William P. Bennett, Northbrook, Ill., assignor to Programming Technologies, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 296,255, Oct. 10, 1972, Pat. No. 3,814,343. This application May 31, 1974, Ser. No. 474,894

Int. Cl.² G11B 15/58; B65H 19/20

U.S. Cl. 242—182 16 Claims



1. In an apparatus for automatically loading a plurality of cassettes of the type having at least one rotatable spool and a leader attached to said spool with a predetermined length of tape or the like including: a loading station; means for storing a plurality of cassettes to be loaded; means for advancing said cassettes, one at a time, from said storing means to said loading station; means for extracting the leader from each cassette in the loading station; means for feeding supply tape to be loaded from a rotatable reel thereof; splicing means for joining the leading end of said tape to the trailing end of said leader; rotatable drive means for rotating the spool of each cassette to wind a predetermined length of said tape therein; and cutting means to sever the tape upon completion of the winding operation, the improvement comprising a drive motor for imparting rotational movement of the reel of supply tape; a clutch-brake assembly operatively linking the drive motor and the reel to activate said reel and control the drag thereon; and means connected to the clutch-brake assembly for controlling the speed of the supply tape; said means including vacuum means for receiving a loop of supply tape and responsive to the size of said loop to correspondingly control the operation of the clutch-brake assembly to maintain a relatively constant loop size.

3,940,081

FLAT CORE FOR WEB WINDINGS

Eugene Joseph Kubicki, Sr., 10325 Hollingsworth Road, Kansas City, Kans. 66109

Filed Feb. 25, 1974, Ser. No. 445,074

Int. Cl.² B65H 75/02

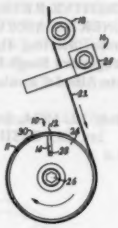
U.S. Cl. 242—68.5 7 Claims

1. A web core blank adapted to be used with a cylindrical, axially rotatable winding mandrel having an axial slot therein, said blank comprising:

a generally flat, relatively thin flexible nonmetallic member of length and configuration for removable and circumferential positioning thereof about said mandrel in a closely fitting, circumscribing manner with the respective ends thereof proximally disposed and with a substantially smooth, projection-free outer arcuate web-receiving surface;

means for joining said respective ends with maintenance of said substantially smooth, projection-free outer arcuate surface to present a web core about said mandrel; and

a tongue connected to said member and being operable for insertion within said mandrel slot for precluding significant relative rotational movement of the web core when said mandrel is axially rotated,



said member having a perforation line spaced inwardly from one of the transverse edges of said member for defining said tongue, the latter being separable from the remainder of said member by tearing along said perforation line in order to present a substantially smooth inner arcuate surface on said web core upon removal of the latter from said mandrel.

3,940,082

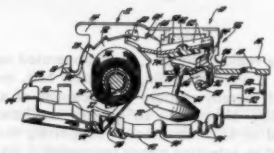
BLOCKING MEMBER FOR LOCKING MECHANISM OF A VEHICLE OCCUPANT RESTRAINT BELT RETRACTOR

Floyd I. Dully, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1975, Ser. No. 548,527

Int. Cl.² A62B 35/02; B65H 75/48

U.S. Cl. 242—107.4 A 3 Claims



1. In a vehicle occupant restraint retractor including a housing, an elongated restraint belt, a reel attaching one end of the belt and being mounted on the housing for belt winding and unwinding rotation in opposite directions, and spring means for biasing the reel in the belt winding direction of rotation, an inertia sensitive mechanism for locking the reel against rotation relative the housing comprising:

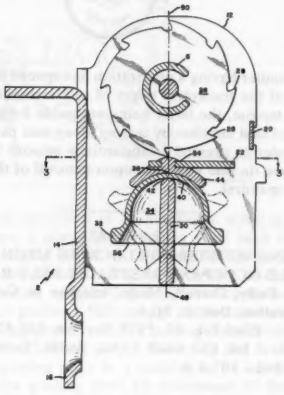
a locking member coacting between the housing and the reel and including a locking portion and an actuating portion, the actuating portion being movable from a first position to a second position to move the locking member from a nonlocking position to a locking position in which the reel is locked from rotation relative the housing, the actuating portion moving through an intermediate position between the first and second positions, a first inertia member movable in response to predetermined inertia forces, the first inertia member engaging the actuating portion of the locking member to effect movement of the locking member from the first position to the second position; and a second inertia member movable under the impetus of inertia forces and moving into the path of movement of the actuating portion between the first and intermediate positions thereof so that the second inertia member blocks movement of the locking member toward the nonlocking position, the second inertia member being tuned to the first inertia member and the locking member so as to move into the blocking relationship with the

locking member as the actuating portion of the locking member reaches the intermediate position.

3,940,083
VEHICLE SENSITIVE RETRACTOR WITH BELL INERTIA MECHANISM

Robert L. Stephenson, Sterling Heights; Robert C. Pfeiffer, Rochester, and Yogendra Singh Loomba, Washington, all of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed July 10, 1974, Ser. No. 487,846
Int. Cl.² B65H 75/48
U.S. Cl. 242—107.4 A **8 Claims**



1. In a vehicle-sensitive, inertia-operated safety belt retractor with a reel for winding the safety belt, means to lock the reel and thereby restrain an occupant of a vehicle during emergency situations, an inertia mechanism, a support mounted on said retractor for supporting the inertia mechanism and an actuating means responsive to said inertia mechanism for operating the means for locking the reel, the improvement wherein:

said support for the inertia mechanism is a support post having an upper end and a lower end;

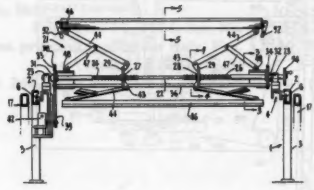
said inertia mechanism is a bell which rests on the upper end of said support post, said bell having a hollow interior, an open bottom and an interior surface; approximately the upper half of said interior surface of said bell having a substantially hemispherical interior pivot area; said upper end of said support post extending through the open bottom of said bell into said hollow interior of said bell; said bell having a plurality of support points within said interior pivot area of said bell, said upper end of said support post supporting said bell at different support points within said interior pivot area of said bell depending upon the orientation of said retractor resulting from installation in a vehicle, said bell having an infinite variety of operable static positions on said support post to which said bell is adjustable with reference to said support post according to the position in which the retractor is oriented by virtue of installation in the vehicle; during dangerous situations said bell pivotable with reference to said support post on any one of said different support points within said interior pivot area; and

said actuating means is disposed on top of said bell and is connected to said reel locking means, said actuating means having an unlocked position and a locked position, said actuating means being disposed in said unlocked position when said bell is in any one of said infinite variety of said operable static positions, said actuating means being moved to said locked position by said bell during dangerous situations to lock said reel and prevent further unwinding of said belt.

3,940,084
MEASURING AND CUTTING MACHINE

William Richard Leahy, 16 Buckley St., Footscray, Victoria, Australia

Filed Aug. 16, 1973, Ser. No. 388,784
Int. Cl.² B65H 75/24
U.S. Cl. 242—110.2 **10 Claims**

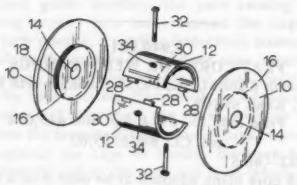


1. A machine for producing a plurality of lengths of sheet material from a roll of the material comprising a frame, fabric supporting means rotatably mounted on the frame, said fabric supporting means including at least three members spaced about the axis of rotation of said means and extending substantially parallel thereto, the members being mounted for selective movement towards or away from said axis to selectively vary the spacing of the members relative to each other, clamping means on at least one member to clamp the end of a length of sheet material to the said at least one member, driving means to rotate said members about said axis to thereby wind sheet material about the members so that one or more layers of material are supported by the members, and means for cutting said layers substantially parallel to the members to produce a plurality of lengths of said material of substantially equal length.

3,940,085
COLLAPSIBLE REEL

Kenneth E. Campbell, 4063 Old Orchard Road, York, Pa. 17402

Filed Feb. 7, 1975, Ser. No. 547,769
Int. Cl.³ B65H 75/22
U.S. Cl. 242—115 **10 Claims**



1. A collapsible reel comprising in combination, a pair of similar unitary flanges each having at least one planar face; a substantially tubular hub the opposite ends of which abut said planar faces of said flanges, said hub being composed of a plurality of similar arcuate segments having concave inner surfaces; and means detachably connecting said ends of said hub in abutting relationship respectively to said planar faces of said flanges comprising similar bosses fixed centrally to and extending axially from said planar faces of said flanges and having arcuate grooves in the peripheries of said bosses posi-

tioned therein axially outward from said planar faces of said flanges, said segments of said hub having on said concave surfaces thereof arcuate ribs complementary in shape and size to said arcuate grooves in said bosses and respectively received closely therein when said hub segments are positioned operatively between said flanges with the ends thereof abutting said planar faces of said flanges, and means connecting said segments to each other to maintain said hub connected operatively to said flanges.

3,940,086

REEL FOR A CABLE

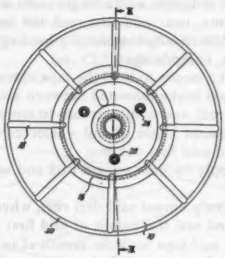
Michel R. A. Stoquelet, 214 rue Chapu 77, Le-Mee-Sur-Seine, France

Filed Dec. 13, 1973, Ser. No. 424,449

Claims priority, application France, Nov. 23, 1973, 73.41752

Int. Cl.² B65H *75/14*

U.S. Cl. 242—118.6 **7 Claims**



1. A reel for very thin cables, such as telephonic cables, comprising, a hollow cylindrical core, two disc-shaped flanges made of a molded plastic material, each flange having a central aperture arranged to permit passage of a supporting spindle, and each flange being provided on its inner surface with an annular groove molded thereinto so as to have a radial size equal to the thickness of said core, the opposite annular end portions of said cylindrical core being removably received in the respective annular groove of the correspondng flange substantially without play and being supported therein radially inwardly and outwardly, a plurality of radial reinforcing ribs provided on the outer surface of each flange, each said rib extending radially outwardly from a position adjacent to but radially outwardly from the annular groove to a position adjacent the peripheral edge of the flange, the cross-sectional area of each said rib decreasing with increasing distance from the center of the flange, a stepped portion formed on the inner surface of each flange which is adjacent the central aperture, an inner tubular element arranged to act as a guide for the supporting spindle, the respective end portions of the tubular element being engaged with the stepped portion of each flange, and a plurality of tie rod means and nut connections arranged between the two flanges inwardly of said cylindrical core to urge the flanges toward one another.

3,940,087

SPOOL

Pierre Portal, Haute Marne 52, Bologne, France

Filed Jan. 21, 1974, Ser. No. 435,285

Claims priority, application France, Jan. 24, 1973, 73.02550

Int. Cl.² B65H *75/14*

U.S. Cl. 242—118.62 **6 Claims**

1. In a spool, the combination of

A. a tubular drum having a longitudinal axis,

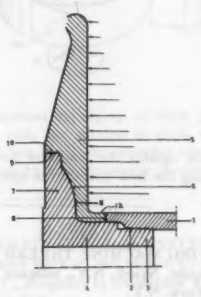
1. said drum having at least one end;

B. a bracket connected to the drum at the said end,

1. said bracket extending generally angularly outwardly from the axis,
2. said bracket including a cooperating face,
3. said bracket terminating radially outwardly in a flange connection having an outer edge of a first diameter measured at a first temperature,
4. said bracket having a first coefficient of expansion; and

C. a flange removably affixed to the bracket,

1. said flange extending generally angularly outwardly from the axis,
2. said flange being provided with a bracket receiving cavity,



a. said cavity receiving the flange connection therein,

b. said cavity terminating radially outwardly in a peripheral edge,

3. said flange having a second coefficient of expansion which is different from the first coefficient of expansion,
4. the cavity peripheral edge having a second diameter measured at the first temperature,
5. the second diameter being less than the first diameter when measured at a first temperature and the second diameter being greater than the first diameter when measured at an elevated temperature, and
6. the outer edge of the bracket flange connection inwardly fitting within the peripheral edge of the flange cavity when the flange and bracket are heated to the elevated temperature.

3,940,088

COILED-LINE PAY OFF METHOD AND APPARATUS

Trenton L. Brown, Bethel Park, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

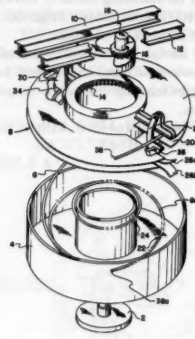
Filed June 19, 1974, Ser. No. 480,731

Int. Cl.² B65H *49/00*

U.S. Cl. 242—128 **2 Claims**

1. A method of feeding coiled line to an operation at a rate matching that at which the operation can accommodate the line, including the steps of situating a lead coil of the line on a spiral table, sensing the diameter of the lead coil on the table, and rotating the coiled line to pay off line to the operation, the rotating being increased or decreased in response to

decreases or increases in the lead coil diameter sensed in the step of sensing, wherein the improvement comprises turning



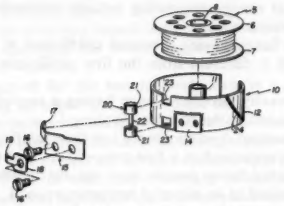
the spiral table against the lead coil for accomplishing said step of situating the lead coil on the spiral table.

3,940,089

SEWING MACHINE THREAD CONTROL

Carl E. Lindquist, Nyack, N.Y., assignor to Willcox & Gibbs, Inc., New York, N.Y.

Filed May 31, 1974, Ser. No. 475,130
Int. Cl.[2] B65H *59/04*; D05B *57/14*
U.S. Cl. 242—156 14 Claims



1. In a sewing machine bobbin case (10) having means (11) to rotatably support a bobbin (5) with flanges (6, 7) thereon, means to control bobbin rotation and bobbin thread tension comprising

a roller (20) having its terminal end portions (21) in engagement with the edges of the flanges (6, 7) of the bobbin (1), said roller having a diameter at the engagement surface which is small with respect to the diameter of the bobbin flanges;

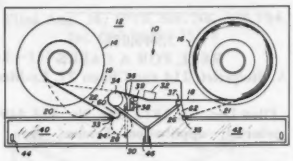
and yielding means (15, 17) yieldingly engaging the roller (20) and retaining the roller in position on the case and in yielding, frictional, rotational, engagement with the flanges (6, 7) of the bobbin, the yielding means applying a yielding drag on the roller which is transferred to the bobbin by engagement between the roller and the flanges of the bobbin.

3,940,090

VACUUM COLUMN LOADING INTERLOCK

Richard W. Pembroke, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Mar. 18, 1974, Ser. No. 451,893
Int. Cl.[2] G11B *15/58*, *23/12*
U.S. Cl. 242—182 4 Claims



1. In a vacuum column-controlled magnetic tape deck, having a first and a second tape reels, a first and a second principal vacuum columns, and a single capstan at the mouth of said first column, near said first reel, the improvement in apparatus for automatically sequentially loading tape into said vacuum columns, comprising:

a. vacuum brake means to hold the tape extending between said reels, said brake mounted between said capstan and said second reel, and tubular means to connect said brake to a point spaced inside of and a selected distance from the mouth of said first column;

b. means to apply vacuum to said first and second vacuum columns;

c. means to slowly unreel said first reel, whereby said tape will cover and seal the mouth of said first column;

whereby when said tape seals the mouth of said first column vacuum will form in said first column and through said tubular means to said brake;

d. vacuum switch means responsive to the formation of vacuum in said first column to apply power to slowly unreel said second reel;

whereby said tape will cover and seal the mouth of said second column and said tape will be drawn into said second column; and

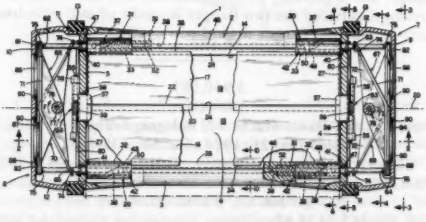
e. means responsive to the slow unreeling of said first reel and the movement of said tape inside said first column past said tubular means to remove the vacuum from said brake after the mouth of said second column has been sealed.

3,940,091

PNEUMATIC TUBE DOUBLE-DOOR SIDE OPENING CARRIER CONSTRUCTION

Peter J. Ekama, Malvern; Larry A. Morrison, North Canton, and Charles B. Barnett, Akron, all of Ohio, assignors to Diebold Incorporated, Canton, Ohio

Filed Mar. 12, 1975, Ser. No. 557,616
Int. Cl.[2] B65G *51/06*
U.S. Cl. 243—34 18 Claims



1. Pneumatic tube carrier construction of the type having a carrier shell formed by spaced side column members and

spaced base members, and in which the base members are joined with and extend across the ends of the column members to form a payload compartment having at least one access side opening; first and second door means, each mounted on an opposite side column member for swinging movement between open and closed positions; each of said door means being adapted to close approximately one-half of the payload compartment side opening when in closed position; latch means adapted to hold the first and second door means in closed position; first housing means formed on at least one end of the carrier shell adjacent one of the base members; and control means mounted within the housing means and operably connected with the latch means and door means, said control means being actuated to unlatch the latch means and to move the door means outwardly into open position when the control means is engaged by an external actuator at a pneumatic tube terminal.

3,940,092

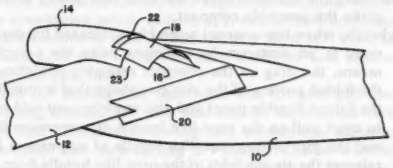
JET FLOW DEFLECTOR FOR AIRCRAFT

Edsel S. Farris, Burton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 7, 1974, Ser. No. 521,685

Int. Cl.² B64C *15/04*

U.S. Cl. 244—12 D **12 Claims**



1. In an aircraft having jet propulsion means, a nacelle mounted in a wing of the aircraft and containing said propulsion means, said nacelle providing a nozzle at its end portion for discharging a jet flow in the aft direction of the aircraft, and deflector means on the nacelle movable between first and second positions, the deflector means engaging the nacelle at the aft end thereof in its first position to form a continuous interior surface with the nacelle constituting a part of said nozzle, and the deflector means being movable downwards and aft relative to the nacelle to its second position in which the deflector means deflects the jet flow downward and is spaced from the nacelle to provide additional jet flow in the aft direction over the deflector means between the nacelle and the upper surface of the deflector means to increase the effective nozzle area.

3,940,093

FLAP OR WING DROOP ARRANGEMENT FOR AN AIRCRAFT WING

Jean Cabriere, Vaucresson, France, assignor to Avions Marcel Dassault-Breguet Aviation, Paris, France

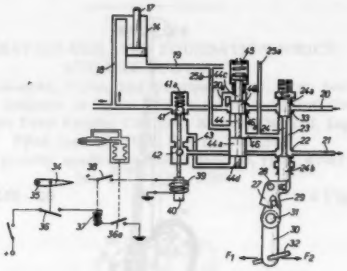
Filed May 28, 1974, Ser. No. 473,710

Claims priority, application France, May 29, 1973, 73.19462

Int. Cl.² B64C *9/24*

U.S. Cl. 244—42 A **6 Claims**

1. In a device for controlling wing droops assembled on the leading edge of an aircraft wing and capable of occupying either a retracted position for flight in the clean configuration or an extended position projecting before and below the wing for producing extra lift, comprising a plurality of jacks for operating the droops, a hydraulic valve means adapted to regulate the supply of hydraulic fluid to said jacks, and control means for said valve means, the improvement wherein said control means comprises a pilot-operated manual control and an automatic control adapted to be actuated by an angle of attack detector of the aircraft, and said droop comprises two independent sections along its length, both of said two sections being operated simultaneously by said manual control



through the simultaneous supplying of their jacks via said valve means, while only the section in each wing which is nearer the wing tip has the jacks therefor operatively connected to valve means by said automatic control.

3,940,094

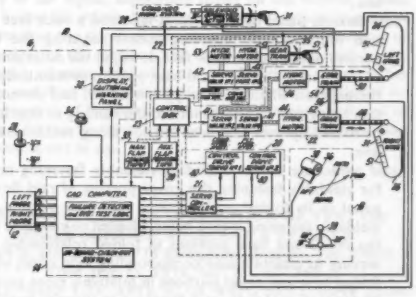
WING SWEEP CONTROL SYSTEM

Robert W. Kress, Lloyd Harbor, and Martin C. Stettler, Stony Brook, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 30, 1974, Ser. No. 519,279

Int. Cl.² B64C *13/18*

U.S. Cl. 244—77 D **30 Claims**



1. A wing sweep control system for controlling the position of the wings of an aircraft, comprising:

a digital computer;

detector means for providing input signals representative of aircraft speed and altitude to said digital computer, said digital computer selecting a predetermined wing sweep angle within a given range of wing sweep angles in accordance with aircraft speed and altitude;

control means responsive to output signals from said computer;

actuator means mechanically coupled to the wings of the aircraft for positioning the wings in response to output signals from said control means; and

coupling means for synchronizing the movement of the wings.

3,940,095

PARACHUTE ASSEMBLY

Henry E. Asciutto, P.O. Box 1008, Romoland, Calif. 92380

Filed Oct. 10, 1974, Ser. No. 513,534
Int. Cl.[2] B64D 17/40
U.S. Cl. 244—148 8 Claims

1. In parachute means of the type adapted for stowage in a parachute container including a parachute canopy, having the usual gores and a skirt, and suspension lines that connect the skirt to risers on a jumper's harness, the improvement comprising:

a flexible panel having a base portion with side edges and a free upper edge and a cover portion with side edges and a free lower edge, said flexible panel being shaped and sized so that it is foldable along a transverse line dividing its base portion from its cover portion to place the base portion and cover portion in superimposed relationship with their corresponding side edges in substantial juxtaposition for predetermined distances from said transverse line;

said flexible panel having a front face and a back face and said improvement including means securing the base portion of the panel, back face down, to the outer surface of said canopy to hold said base portion substantially flat thereagainst when the canopy is inflated, said cover portion being free of attachment to the canopy so that it can be folded up over said base portion along said transverse line;

said parachute means including yieldable fastening means for yieldably fastening the cover portion of said flexible panel in its folded position over said base portion, the yieldable fastening means being adapted to yieldably hold the cover and base portions in folded relationship and serving to maintain said corresponding side edges of the folded base and cover portions in relatively close proximity for said predetermined distances to thereby provide a pocket-like pouch therebetween when the parachute means is stowed in said container;

the base portion of said flexible panel being fastened to said canopy so that its side edges straddle a radial seam between adjacent gores of the canopy, and said transverse line runs substantially perpendicular to said radial seam at a predetermined distance from the skirt of the canopy;

said improvement being adapted to cooperate with the other parts of said parachute means so that the latter can be made into a compact parachute assembly shaped and dimensioned for stowage in said parachute container by the steps of;

forming said canopy into a compact elongate shape adjacent the back face of said panel with the skirt of the canopy at one end of the elongate shape and the apex of the canopy at the other end, the elongate shape being of a conventional configuration for parachute packing purposes in the sense that all of said suspension lines are brought together at its skirt end, the width of said flexible panel being such that the sides of said elongate shape are spaced inwardly from said corresponding side edges of the base and cover portions of the panel at least for said predetermined distances;

folding the skirt end of the elongate shape back so that the folded end of the said shape coincides substantially with the position of said transverse line;

grouping said suspension lines into a rope-like bundle;

folding the cover portion of said flexible panel over the folded skirt end of the elongate shape;

folding said rope-like bundle of suspension lines to zig-zag configuration across the folded cover portion of said flexible panel and releasably fastening the folds of said rope-like bundle in position against the flexible panel and folded canopy skirt, the fastening being accomplished by means of at least part of said yieldable fastening means and said at least part of said yieldable fastening means including said zig-zag configuration of the rope-like bundle and a plurality of fastening means engaging the opposite folds of the zig-zag configuration to cooperate with the rope-like bundle to confine the folded skirt of the canopy between the cover and base portions of said panel, said plurality of fastening means being yieldable to release the folds of the rope-like bundle in sequence in response to substantial pull on said rope-like bundle; and

doubling the elongate shape back on said folded panel to make the assembly compact;

whereby when the compact assembly is released for deployment in an airstream by a jumper using the parachute means, the drag on the compact assembly stretches out the folded portion of the elongate shape that is outside of the folded flexible panel and also stretches out said risers to exert pull on the rope-like bundle of suspension lines, and the pull on the rope-like bundle of suspension lines releases the zig-zag folds of the rope-like bundle from said plurality of fastening means in sequence to release the folded skirt from the flexible panel to permit the pull of the stretched suspension lines to unfold the folded skirt and turn the skirt into the airstream with subsequent inflation of the canopy, the airstream air being prevented from blowing directly into said pocket-like pouch of the folded flexible panel prior to release of the folded skirt therefrom and thereby causing a risk of premature release of the rope-like bundle of suspension lines from said fastening means, and premature inflation of the canopy, by virtue of the fact that the width of the folded end of said flexible panel exceeds that of the folded skirt and the further fact that said yieldable fastening means holds said corresponding side edges of the folded base and cover portions of said panel in said relatively close proximity for said predetermined distances prior to said release of said folded skirt.

3,940,096

RE-ORIENTATION OF A SPACECRAFT RELATIVE TO ITS ANGULAR MOMENTUM VECTOR

John Edward Keigler, Princeton, and Ludwig Muhlfelder, Livingston, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 27, 1974, Ser. No. 527,836
Int. Cl.[2] B64G 1/10
U.S. Cl. 244—165 4 Claims

1. A system for orienting the attitude of a spin-stabilized vehicle in a given orbit, said vehicle including a body, a nutation damper, and a momentum wheel, comprising:

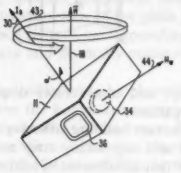
means for spinning said vehicle at a first spin rate about a first axis comprising the maximum moment of inertia of said vehicle whereby said first axis is in alignment with the angular momentum vector of the vehicle,

said momentum wheel being affixed to said body and oriented to spin about an axis perpendicular to said maxi-

mum moment of inertia axis, said perpendicular axis having a moment of inertia less than said maximum moment of inertia,

means for reducing the spin rate of said vehicle from said first spin rate to a second spin rate such that the angular momentum of said vehicle about said first axis at said second spin rate is substantially equal to a predetermined angular momentum for said vehicle corresponding to a predetermined angular momentum of said vehicle in said given orbit,

means for energizing said momentum wheel to rotate at a rate sufficient to provide and maintain nutational stability of said vehicle whereby said vehicle is effected to move initially in a divergent spiral through an angle in inertial space such that said momentum wheel axis and said transverse axis move toward said angular momentum vector in a converging spiral, and the spin rate of said body about said transverse axis is reduced to a third spin rate, said third spin rate being less than either of said first and second spin rates,



means for moving said transverse axis towards and maintaining coincidence with said angular momentum vector of said vehicle and moving said momentum wheel axis towards and maintaining a parallel relation with said angular momentum vector, said movement comprising damping of nutation by said nutation damper,

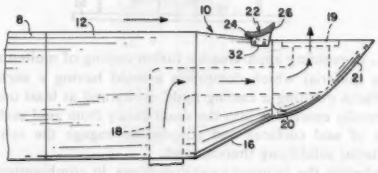
the angular momentum of said wheel being greater than the product of said third spin rate times the difference between said maximum moment of inertia and said transverse moment of inertia of said vehicle.

3,940,097

EXHAUST FLOW DEFLECTOR

John C. Wilson, Newport News, Va., and Craig S. Shaw, Middletown, Conn., assignors to The United States Government as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed June 25, 1974, Ser. No. 482,967
Int. Cl.² B64D *33/04*
U.S. Cl. 244—23 D **5 Claims**



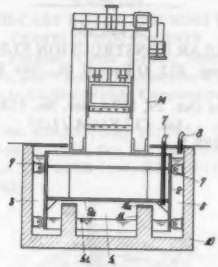
5. Apparatus for reducing spillover inherent when aircraft hot engine gases flowing through a curved duct exits from the exhaust exit end of the curved duct into a freestream air flow, comprising an elongated deflector having square end tips mounted entirely upstream of and adjacent the exhaust exit end of the curved duct and having a span at least equal to the diameter of the exhaust exit end of the curved duct and having a concave curvature surface formed along the span thereof, the span of said deflector being alined substantially normal to the direction of flow of the freestream air and the concave curvature surface inclined such that the freestream air flow flowing over the concave curvature surface is turned toward the direction of flow of the gas exiting from the exhaust end of the exhaust duct.

3,940,098

VIBRATION-ISOLATED FOUNDATION WHICH UTILIZES BUOYANCY

Shuhei Takasaki, Osaka, and Yasumoto Goto, Otsu, both of Japan, assignors to Osaka Prefectural Government, Osaka and Goto Drop Forging Co., Ltd., Kusatsu, both of, Japan

Filed June 11, 1973, Ser. No. 368,585
Claims priority, application Japan, June 20, 1972, 47-61725
Int. Cl.² F16M *13/00*
U.S. Cl. 248—20 **4 Claims**



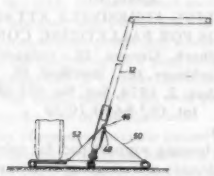
1. A vibration-isolating foundation for a machine which produces vibrations or impact forces during operation, comprising an inertia block on which the machine is adapted to be supported and having a cavity on the bottom thereof, and a tank containing a body of liquid having an upper surface open to the atmosphere in which the said block is floated with said cavity in the liquid, supporting tables on the bottom of said tank below the inertia block and having a vertical dimension greater than the depth of said cavity, whereby at least part of the weight of the machine and the block is supported by the bouyancy of water applied to the block through the air in the cavity and thus transmission of a dynamic load produced by the operation of the machine through the liquid is reduced to a large degree and the machine can rest thereon when the machine is not in use.

3,940,099

APPARATUS FOR USE IN ERECTION OF TENT OR OTHER SHELTER ADJACENT A VEHICLE

Hubert D. McCleskey, 5715 Effingham, Houston, Tex. 77035

Filed July 11, 1974, Ser. No. 487,566
Int. Cl.² A45F *1/16*; A01K *97/08*; A45G *33/12*; G09F *17/00*
U.S. Cl. 248—38 **2 Claims**



1. A shelter support apparatus for use with a vehicle supported on at least two tires, comprising:

a generally planar base member having an exposed upper face of size adequate to receive thereon the print of a tire

on a vehicle to weight said base in a fixed position, said base member having a structural frame member extending from its face such that it is laterally of the tire on said face;

a pivotally mounted rotatable upwardly opening bayonet socket carried on said from member and mounted for rotation about a selected axis;

an elongate pole adapted to support a shelter and having a lower end portion releasably connected into said socket for support thereof above said base;

a flexible cable means connected to said base member and said socket to control its angle of rotation about the selected axis and hence the position of said pole; and,

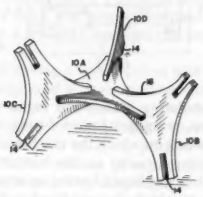
a second flexible cable means connected to said base and said socket member for limiting the angle of said socket in cooperation with said first flexible cable means wherein the second cable means acts oppositely of said first cable means.

3,940,100

MODULAR CONSTRUCTION ELEMENT

Merrill W. Haug, 815 O'Farrell St., San Francisco, Calif. 94109

Filed Oct. 29, 1974, Ser. No. 518,344
Int. Cl.² F16M *11/20*
U.S. Cl. 248—188.1 **4 Claims**



1. In combination, a group of four inflexible, modular construction elements, each element being flat and having three equilaterally spaced legs with arc-shaped sides between each leg, each of the arc-shaped sides having the same radius of curvature, each of the legs further having a slot through its thickness which extends toward the centroid of the element, the width of the slots being only slightly greater than the thickness of the element, and at least one of the elements having the slot in each of its legs fully inserted in the slot in one leg of a separate one of the other three elements so that one element is oriented perpendicularly to the other three elements and is inflexible interlocked therewith to form a rigid, load bearing structure whose constituent elements are inflexible with respect to each other when so interlocked.

3,940,101

QUICK-BONDING ADHESIVELY ATTACHABLE SUPPORT PADS FOR PALLETIZING CONTAINERS

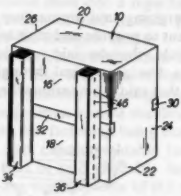
Charles A. Heidelbach, Geneva, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Aug. 2, 1974, Ser. No. 494,085
Int. Cl.² B65D *19/20*
U.S. Cl. 248—346 **3 Claims**

1. A rigid load bearing support pad for quick attachment directly to the underside of a shipping container to space the container from a surface on which it rests, said pad having a lower side for disposition toward said surface and an upper side for disposition toward said underside of said container, said pad comprising:

a plurality of elongated strips of corrugated sheet material arranged to provide a stack of adjacent contiguous layers of said sheet material, each of said strips defining at least one of said layers and said adjacent contiguous layers of said sheet material being glued together, each of said layers of said corrugated sheet material having corrugations which are disposed normal to said upper side and said lower side of said support pad;

top and bottom rigid facing strips rigidly secured by gluing at the upper side and at the lower side of said stack,



respectively, and transversely disposed with respect to said corrugations;

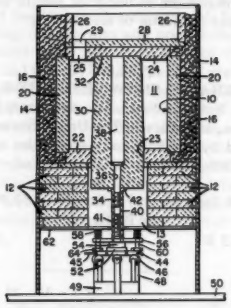
a coating of instant bonding adhesive disposed on the upper surface of said top facing strip and serving as the sole means to effect attachment of said support pad directly to said underside of said container when pressed thereagainst, and a removable protective sheet overlying said coating.

3,940,102

APPARATUS FOR REMOVING CORE DURING REFRACTORY MATERIAL FUSION CASTING

Edward L. Bedell, Jr., Louisville, Ky., assignor to Corning Glass Works, Corning, N.Y.

Filed June 12, 1974, Ser. No. 478,828
Int. Cl.² B29C *11/00*
U.S. Cl. 249—63 **6 Claims**



1. In molding apparatus for fusion casting of molten refractory material which comprises a mold having a surface or surfaces defining a casting mold cavity and at least one core normally extending into the mold cavity from said surface or one of said surfaces and adapted to engage the refractory material solidifying therearound,

wherein the improvement comprises, in combination

the core being formed of material having a melting temperature substantially above the temperature of the molten refractory material to be cast in the apparatus, also extending in the direction opposite from the mold cavity into an aperture in the mold, normally sealably engaging the walls of the aperture and adapted to be disengaged from the refractory material solidified therearound,

releasable stored energy means connected to the core through the aperture and adapted to effect the disengage-

ment of the core from the refractory material solidified therearound upon release of the stored energy, the energy means including:

a connector having one end attached to the core,

spaced supporting means including rollers,

compression load means mounted on the end of the connector opposite the end thereof attached to the core and having means for normally engaging the supporting means to effect a compression load which is adapted to effect the aforesaid disengagement upon release of the load by disengagement of the compression load means from the supporting means, the compression load means including:

a pressure plate rotatably mounted on the end of the connector opposite the end thereof attached to the core and having, as the means for normally engaging the supporting means, peripheral bosses, extending radially of the rotation axis of the plate with the bosses being spaced in a pattern corresponding to that of the supporting means and normally engaged on the rollers thereof,

compressible means adapted to be placed in compression by the plate when the bosses are engaged on the rollers and, upon disengagement of the bosses from the rollers, adapted to have the compression thereof released to exert a force on the plate and thence the core via the connector to concurrently overcome frictional force between the core and refractory material solidified therearound and move the plate away from the mold, and

means for releasing the stored energy comprising means for disengaging the compression load means from the supporting means including:

means for rotating the plate, and

indented peripheral portions in the plate between pairs of adjacent bosses and, upon rotation of the plate, adapted to coincide with the position of the supporting means with the bosses disengaged from the rollers and to allow the plate to pass between the supporting means in a direction away from the mold such that the compression of the compressible means is released.

3,940,103

APPARATUS FOR INJECTION MOLDING A TAMPER-PROOF PLASTIC CAP

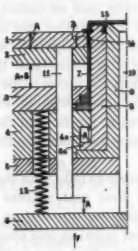
Fernand Hilaire, Monte Carlo, Monaco, assignor to Captocap Limited, Vaduz, Liechtenstein

Filed Feb. 7, 1975, Ser. No. 547,985

Claims priority, application France, Feb. 21, 1974, 74.05926

Int. Cl.² B29F 1/14

U.S. Cl. 249—68 **3 Claims**



1. Mold for manufacturing a plastic closure comprising an external skirt formed with internal ribs corresponding to the ring portion and grooves of the neck of the container to be stopped, and bounding a guaranty strip partially tearable due to circular thinning grooves formed on the inner surface of said skirt, said mold comprising a compensation plate, a fixed base plate overlying said compensation plate, a sliding plate above said fixed plate, a resilient pusher between said base plate and said sliding plate, a cylindrical ejection ring solid with said sliding plate, a cylindrical core solid with said base plate, a shaped sleeve adapted to slide freely on said core and guided by an integral heel portion, said ejection ring being movable through a height equal to that of said notch formed in said base plate, a fixed plate disposed above said supporting plate and comprising holes for guiding said sleeve and ejection ring, an impression plate disposed above said fixed plate and formed with holes corresponding to the holes of said fixed plate, a push member secured to said impression plate and adapted to be actuated by said compensation plate, and a chamber defined between said impression plate and said sliding sleeve above said ejection ring and into which the plastic material is adapted to be injected.

3,940,104

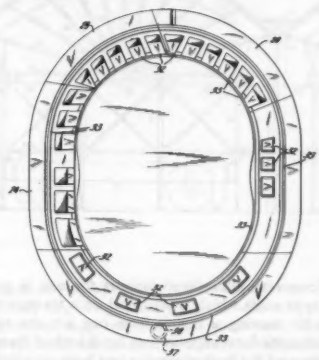
MOLD FOR DIE-CAST ROTOR HOUSING FOR ROTARY COMBUSTION ENGINES

Walter Ludwig Hermes, Cedar Grove; Murray Berkowitz, Woodcliff Lake, and Charles Lombaerde, Ridgewood, all of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Division of Ser. No. 489,595, July 18, 1974. This application Apr. 2, 1975, Ser. No. 564,359

Int. Cl.² B28B 7/16; B22C 9/10

U.S. Cl. 249—142 **5 Claims**



1. A permanent mold for pressure-casting a generally annular rotor housing shell for trochoidal engines, the shell having a longitudinal axis and parallel side faces normal to the axis and having an inner wall with a trochoidal inner surface and an outer wall spaced radially from the inner wall and having a plurality of generally axially oriented passages therethrough between the inner and outer walls and spaced circumferentially around the shell, the permanent mold comprising:

a. a pair of opposed side pieces each having a plug of trochoidal cross-section projecting inwardly therefrom parallel with the shell axis, each plug having a plane face on its projecting end, the plane faces meeting at the midplane of the mold, each of the side pieces being retractable along the line of the shell axis;

b. a plurality of opposed arcuate pieces of L-shaped cross-section circumferentially surrounding the side pieces, the first leg of each of the arcuate pieces being in contact with a side piece and the second leg extending to the midplane of the mold and having a plane face meeting the opposed plane face of the opposite arcuate piece;

c. the extending second legs of the arcuate pieces surrounding the trochoidal plugs of the side pieces and being radially spaced therefrom, the side pieces and the arcuate

pieces collectively defining a generally annular mold cavity around the trochoidal plugs;

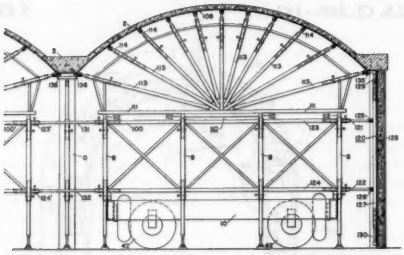
d. the inner faces of the first legs of each of the arcuate pieces having a plurality of fingers extending therefrom in the generally axial direction into the mold cavity and meeting like fingers from the opposite arcuate piece at the midplane of the cavity, the fingers of at least some of the arcuate pieces having their individual axes slanted from each side angularly to the mold axis to a position radially closer to the mold axis at their meeting point at the midplane; and

e. the arcuate pieces having slanted fingers being retractable in the direction parallel to the finger axes.

3,940,105
FORM SUPPORT FOR USE IN MAKING ARCHED CEILING

Charles E. Metrailer, 4656 Bluebonnet Drive, Baton Rouge, La. 70809

Filed Nov. 19, 1973, Ser. No. 416,961
Claims priority, application Canada, Apr. 12, 1973, 168579
Int. Cl.² E04G *11/56*
U.S. Cl. 249—209 **8 Claims**



1. A concrete pour form support for use in pouring of vaulted type roofs which is mounted on a transportable type carriage for moving as a unit from one job site to another, which concrete form support can be detached from the carriage, removed for further service and later reunited with the carriage for removal to a new pour position, the combination comprising

a horizontal frame assembly wherein is included a plurality of parallelly aligned, horizontally oriented beams, which lie in a common plane,

a plurality of vertically oriented posts affixed upon each of the said beams, each post being extended downwardly for attachment to the carriage,

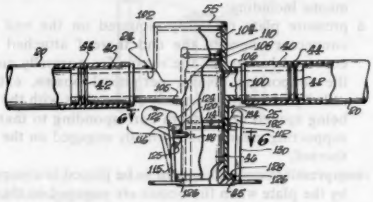
a plurality of parallel sets of aligned tubular posts, the number of tubular posts in a set being substantially equal, the posts of each set radiating outwardly from substantially the center of the parallelly aligned, horizontally oriented beams constituting the horizontal frame assembly,

a plurality of cross-bars corresponding in number with the number of tubular posts in a set which radiate outwardly from a beam located in the horizontal frame assembly each cross-bar containing a plurality of downwardly projected, perpendicularly attached members which provide a telescoping fit with the tubular posts of the parallel sets of aligned tubular posts so that the said cross-bars can be adjusted inwardly or outwardly with regard to the aligned tubular posts to provide a surface which can be covered and rendered suitable for pouring thereon vaulted type concrete roof structures ranging in length of span and in contour from circular to elliptical.

3,940,106
LATCHING VALVE FOR EXTENDIBLE WATERING SYSTEM FOR FOWLS

Harold W. Hart, and Warren H. Hart, both of Glendale, Calif., assignors to H. W. Hart Mfg. Co., Glendale, Calif.

Division of Ser. No. 208,750, Dec. 16, 1971, Pat. No. 3,826,467, which is a division of Ser. No. 888,554, Dec. 29, 1969, Pat. No. 3,664,305. This application Jan. 28, 1974, Ser. No. 436,988
Int. Cl.² F16K *35/00*
U.S. Cl. 251—100 **17 Claims**



1. In a valve, the combination of:

walls forming an inlet passage and an outlet passage spaced from each other in a first direction,

a wall forming a cylinder and having inner and outer ends and having its inner end in communication with the outlet passage and having its outer end opening onto the exterior of the valve, said cylinder extending axially in a second direction transverse to the first direction,

said cylinder extending across said inlet passage and having a side port in communication with the inlet passage;

a valve member slidingly mounted in said cylinder for axial movement in said cylinder between an inner closed position closing said side port to cut off the inlet passage and an outer open position uncovering the side port to permit fluid flow from the inlet passage through the side port into the cylinder and out of the inner end of the cylinder into the outlet passage,

first locking means disposed on the cylinder,

second means disposed on the cylinder in spaced relationship to the first means in the second direction, and

third means disposed on the valve member for cooperation with the first means, in a first limit position defined by the second and third means, for locking the third means on the first means in the first limit position and for cooperation with the second means for limiting the sliding movement of the valve member in the second direction to a second limit position.

10. Apparatus for controlling the flow of fluid through a pipeline for use by fowl, the pipeline having first and second pipes each having an inlet and an outlet, the first pipe being at the upstream end of the pipeline and the second pipe being at the downstream end of the pipeline, including,

a housing defining a first opening at the outlet side of the first pipe and defining a second opening at the inlet end of the second pipe and defining an axial passage in a direction transverse to the flow of fluid through the pipeline and at a position between the first and second openings,

a valve member slidable axially with the axial passage in the housing between first and second limit positions and having walls closing the opening in the inlet side of the first pipe in the first position and spaced from the opening in the inlet side of the first pipe in the second position to provide for the passage of fluid through the pipeline in the second position,

means disposed on the valve member in cooperative relationship with the axial passage in the housing in the first position of the valve member for sealing the housing and the valve member against the flow of fluid in the first position of the valve member,

first means on the housing member for defining a detent,

second means disposed on the housing in axially spaced relationship to the first means and defining a shoulder, and

third means disposed on the valve member and extending externally from the valve member and cooperative with the first means in the first limit position of the valve member for retaining the valve member in the first limit position and cooperative with the second means on the housing member in the second limit position for retaining the valve member in the second limit position.

3,940,107

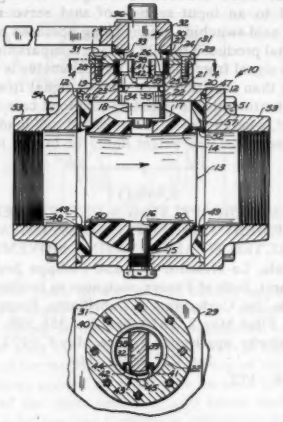
ROTARY VALVE WITH SPRING CLUTCH

George G. Allenbaugh, Jr., Wadsworth, Ohio, assignor to Premier Industrial Corporation, Cleveland, Ohio

Filed Sept. 6, 1974, Ser. No. 503,694

Int. Cl.² F16K *5/08*

U.S. Cl. 251—297 **7 Claims**



1. In a fluid flow control valve, the combination of a valve body, a flow control valve member mounted for axial rotation in said valve body, an adjustable control assembly rotatably mounted in said valve body and engaging said valve member to effect selective angular rotation thereof, said control assembly comprising a connector part engaging said valve member and a driver part operatively coupled to said connector part, and said control assembly including resilient contractible clutch means frictionally engaging said valve body and having end portions thereof disposed between said connector part and said drive part in the path of angular rotation thereof, said end portions being responsive to rotation of said drive part to cause contraction and release of said clutch means and being responsive to valve member-induced rotation of said connector part to cause expansion and locking of said clutch means on said body.

3,940,108

REINFORCEMENT RING AND SEAT FOR BUTTERFLY VALVE

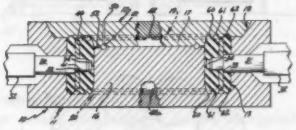
Robert B. Edwards, Milton Township, Cass County, Mich., assignor to Nibco Inc., Elkhart, Ind.

Filed Sept. 11, 1974, Ser. No. 504,855

Int. Cl.² F16K *1/226;* **B22D** *19/00*

U.S. Cl. 251—306 **1 Claim**

1. A seat for a butterfly valve, said seat being annular and having a central axially extending passageway therethrough; said seat having a body of molded elastomeric material, an annular rigid reinforcing ring embedded in said material; a pair of diametrically positioned shaft openings through said seat and said reinforcing ring having their central axis arranged radially of said seat; said seat having a pair of axial end faces; each of said end faces having a pair of radially spaced axially extending annular beads projecting outwardly from the surface thereof forming an annular recess therebetween, the improvement in said seat comprising: a pair of axially aligned



support extensions projecting axially from opposite axial faces of said ring; said ring being radially aligned with said recesses and the maximum axial width of said extensions being no greater than the axial thickness of said body of molded elastomeric material at the bottoms of said recesses whereby said beads may be compressed to form a seal when said valve is installed without interference from said extensions.

3,940,109

LIFTING DEVICE FOR RAISING, LOWERING AND SUSPENDING HEAVY LOADS

Nils Harald Ahlgren, Skyttevagen 22, 133 00 Saltsjobaden, Sweden

Filed Jan. 29, 1975, Ser. No. 545,198

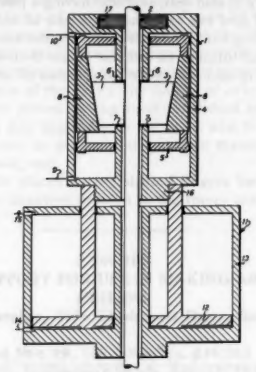
Claims priority, application Sweden, Jan. 30, 1974, 7401176; Mar. 14, 1974, 7403403

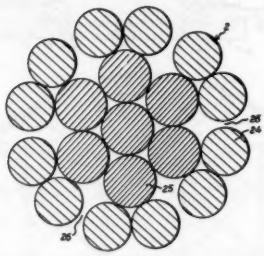
Int. Cl.² B66F *1/00*

U.S. Cl. 254—106 **5 Claims**

1. A lifting device for raising, lowering and suspending heavy loads comprising a climbing jack with alternating gripping means and a lifting element, where the lifting element for allowing repeated co-operation with the gripping means con-

sists of a plurality of outer wire elements and at least one inner wire element, where the elasticity of at least one inner wire





element is greater than the elasticity of the outer wire elements.

3,940,110

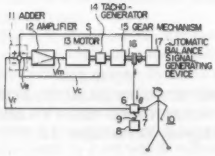
LIFTING APPARATUS

Kenro Motoda, 9-32-4, Kami-Kitazawa, Setagaya, Tokyo, Japan

Continuation-in-part of Ser. No. 460,473, April 12, 1974, abandoned, which is a continuation of Ser. No. 356,063, May 1, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,887

Int. Cl.[2] B66D *1/00*

U.S. Cl. 254—168 **1 Claim**



1. A lifting apparatus for moving a load on a load carrying section by driving a crane-type arm through a driving section with the aid of a target speed signal obtained by operating a control lever provided in an operating section, said lifting apparatus comprising:

a. a servo mechanism means, provided in said driving section, for moving said load carrying section with the aid of said target speed signal;

b. an automatic balance signal generating means, coupled to an output shaft of said servo mechanism means, for supplying an automatic balance signal to said servo mechanism means so that when said control lever is not operated, said load carrying section is maintained stopped;

c. a weight limit setting means operatively coupled to said operating section, for setting a weight limit which said lifting apparatus can safely move, said weight limit setting means comprising a spring member the top end of which moves vertically in proportion to the weight of a load, movement converting means coupled to the top end of said spring member for converting the vertical movement of said spring member into a rotational movement, a first potentiometer operatively connected to said movement converting means for converting the rotational movement into a voltage signal, and a voltage comparator for comparing said voltage signal with a reference voltage signal representative of said weight limit which is supplied thereto by a second potentiometer, thereby producing an output signal; and

d. a Zener diode connected through switching means in parallel to an input section of said servo mechanism means, said switching means being operated by said output signal produced by said voltage comparator when said voltage signal from said first potentiometer is equal to or greater than said reference voltage signal from said second potentiometer to maintain said load carrying section stopped, whereby when the weight of said load is equal to or greater than said weight limit, the load is not moved.

3,940,111

APPARATUS FOR APPLYING A DETERMINED FORCE TO AN ELEMENT CONNECTED TO AN INSTALLATION SUBJECTED TO ALTERNATING MOVEMENTS

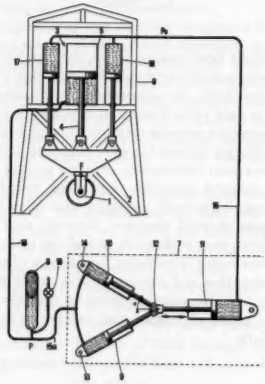
André Castela, Le-Mesnil-le-Roi, and Philippe Joubert, Meudon-la-Foret, both of France, assignors to Institut Francaise du Petrole, des Carburants et Lubrifiants, France

Filed May 2, 1973, Ser. No. 356,388

Claims priority, application France, May 5, 1972, 72.16072

Int. Cl.[2] B66D *1/48*

U.S. Cl. 254—172 **21 Claims**



1. An apparatus for an installation subjected to alternate displacements, wherein said apparatus maintains a predetermined force on an extended element connected to said installation, said apparatus comprising at least one main jack, at least one pressurized fluid accumulator, said main jack being supplied with said pressurized fluid from said accumulator for maintaining the extended element under tension, and a regulating device connected to said accumulator in parallel with said main jack, said regulating device comprising at least two regulating jacks whose axes form an angle therebetween, said

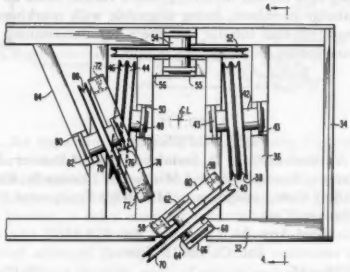
regulating jacks being connected by at least one articulation, and said apparatus further comprising at least one adjusting jack connected to said regulating device, said adjusting jack applying an adjustment force on the extended element, and said adjusting jack having a fixed orientation in relation to that of said main jack, said adjusting jack applying said adjustment force to the extended element along the entire path of action of said main jack during changes in pressure in said accumulator and thereby adjust for changes in pressure in said accumulator, thereby producing the predetermined force on the extended element.

3,940,112

CROWN BLOCK

Freeman Roderick Lea, Orange, Calif., assignor to Santa Fe International Corporation, Los Angeles, Calif.

Filed Nov. 29, 1973, Ser. No. 420,255
Int. Cl.² B66D 1/36
U.S. Cl. 254—190 B **27 Claims**



1. A crown block for use in well drilling apparatus having a mast, draw works and a travelling block comprising:

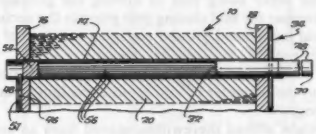
a frame having an open center in substantial vertical registration with the centerline of a well being drilled and adapted for mounting adjacent the top of the mast, a pair of sheaves carried by said frame on each of the opposite sides of the open center of said frame and adapted to reeve a drilling line thereabout and about the sheaves of a travelling block supported by the mast from said crown block, the pair of sheaves on one side of the open center of the frame lying on a common axis and the pair of sheaves on the other side of the open center of the frame lying on a common axis, a cross-over sheave carried by said frame for transferring the drilling line from the pair of sheaves on one side of the open center of said frame to the pair of sheaves on the other side of the open center of said frame, said cross-over sheave being spaced from the open center of said frame and located adjacent an edge of said frame, each of said pairs of sheaves being obliquely mounted relative to a side edge of said frame whereby planes containing a sheave of each pair thereof intersect at an acute angle on the side of said frame adjacent to which said cross-over sheave is mounted, a deadline sheave carried by said frame adjacent an edge thereof for reeving the drilling line from the travelling block and directing the line for securement to the drilling apparatus, a fastline sheave carried by said frame adjacent an edge thereof opposite the frame edge adjacent to which said cross-over sheave is located for reeving the drilling line from the draw works to a sheave carried by the travelling block, said fastline sheave and said deadline sheave being spaced from the open center of said frame and being obliquely mounted relative to a side edge of said frame and to planes containing said pairs of sheaves whereby planes containing said fastline sheave and said deadline sheave intersect at an acute angle to one side of said frame, the axes of said pairs of sheaves, said deadline sheave and said fastline sheave lying at different elevations in said crown block with the plane of operation of the deadline sheave intersecting the plane of operation of at least one of the pair of sheaves on one side of the open center of said block along a vertical line intersecting each said deadline sheave and the one sheave of the latter pair of sheaves.

3,940,113

PORTABLE FENCE

William J. Hirsch, 211 Brantwood Road, Eggertsville, N.Y. 14226

Filed June 16, 1975, Ser. No. 587,409
Int. Cl.² E04H 17/16
U.S. Cl. 256—24 **11 Claims**



1. A portable fence comprising:

a. storage means comprising a hollow elongated post element and a pair of guide elements connected to said post element at axially spaced locations thereon defining an open region between said guide elements in an axial direction and in all radial outward directions from said post element;

b. a length of flexible fencing fixed at one end to said post element and wound around said post between said guide elements so as to be stored thereon; and

c. a supporting element removably carried by said storage means, said supporting element being elongated and adapted to be driven in the ground adjacent one end thereof and to be operatively connected to said storage means adjacent the other end thereof in a manner supporting said post element in a generally vertical position and permitting rotation of said post element relative to said supporting element whereby said fencing can be withdrawn from said storage means for placement in a position of use with said post element supporting said fencing adjacent one end thereof.

3,940,114

FENCING KIT

Joseph A. Rivelli, 5047 Oakton St., Skokie, Ill. 60076

Continuation of Ser. No. 353,306, April 23, 1973, abandoned. This application July 16, 1974, Ser. No. 488,934
Int. Cl.² E04H 17/14
U.S. Cl. 256—32 **4 Claims**

1. A kit for fencing a small area such as a play area or the like without the need of special tools, said kit comprising:

a. a predetermined length of flexible fencing material having a total length less than the perimeter of said area by a small amount as measured by the permissive stretch of said fencing to enclose said area along said perimeter;

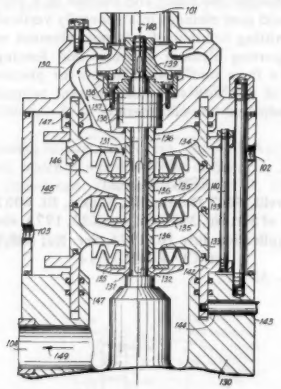
b. a plurality of fence posts including means for securing each post to said flexible fencing with a distance between each post to a predetermined amount;
c. a plurality of ground engaging members, each being separable from said fence posts, each being adapted to enter the ground and thereafter to have a fence post secured thereto;
d. said ground engaging members being spaced from an adjacent one a selected modular distance which is slightly greater than corresponding distance between cooperating posts secured to said flexible fencing;
e. a closing post having a dual function:
i. one being that of driving said ground engaging members into the ground one by one prior to the securement thereto to a related fence post,
ii. the other being that of driving the ground engaging member for said closing post prior to the securement to said last named ground engaging member of said closing post;
f. said closing post having an internal diameter corresponding to the diameter of said ground engaging member, and having;
g. a weight affixed therewithin spaced from an end thereof corresponding generally to the extent of said ground engaging member above the ground;
h. said weight being of mass sufficient to enable said closing post to drive said ground engaging members readily into the ground.

3,940,115

EMULSIFYING AND DISPERSING APPARATUS

Manfred Zipperer, Etzenbach 141, 7813 Staufen; Br., Germany

Filed Apr. 1, 1974, Ser. No. 457,133
Claims priority, application Germany, Aug. 6, 1971, 2139497
Int. Cl.² B01F 7/16
U.S. Cl. 259—7 8 Claims



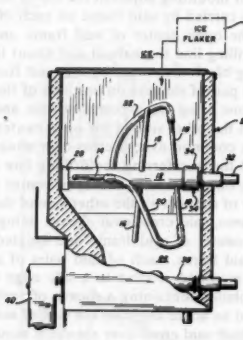
1. An emulsifying dispersing apparatus comprising: a plurality of concentric cutting rims rotatable relative to each other, mounted in radial alternation on a stator and on a rotor, having a common axis of rotation, said rotor being rotatable relative to said stator; said rims including interacting teeth and defining therebetweeen a cavity which serves as a central feed chamber, and said teeth further interacting at very high speeds; a hollow tubular mounting of said stator for a shaft of said rotor; wherein opposite cutting flanks of said teeth are rotatable relative to one another in parallel alternation, said flanks being inclined at an acute angle to the common axis of rotation toward respective adjoining sides, when viewed from opposite directions; adjusting means for the axial displacement and adjustment of respective rims toward one another on said stator and said rotor, and thus of a clearance gap between said cutting flanks, to facilitate relative axial adjustment between said rotor and said stator even during operation of the apparatus; wherein the magnitude of the angle of parallel flanks of radially consecutive ones of said rims decreases to the common axis of rotation, looking from said feed chamber toward an outside one of said rims; and wherein said teeth are pyramidal in the radial cross-sectional direction and rectangular in the peripheral cross-sectional direction; the tooth roots between teeth of said consecutive rims lying higher than the tooth roots between adjacent teeth of the same rim, with the exception of the tooth roots of an outermost one of said rims and finally wherein said tubular mounting includes a pair of telescopingly adjustable and interlocking tubular members forming said adjusting means, threaded means for axially adjusting said tubular members, and lockscrew means for interlocking said tubular members, and a vernier scale on one of said tubular members, being alignable with markings on another one of said tubular members for determining the relative position of said adjusting means.

3,940,116

ICE DISPENSER

Jerry M. Verlinden; Gary D. Swinford, both of Denver; Kyle L. DeJaeger, Broomfield, and Michael W. Kennedy, Englewood, all of Colo., assignors to Mile High Equipment Company, Denver, Colo.

Filed Apr. 24, 1974, Ser. No. 463,615
Int. Cl.² B01F 7/04
U.S. Cl. 259—45 10 Claims



1. In an ice storage or dispensing device for storing particulate ice in an agitated state or condition, including an ice storage hopper having interior wall means and an agitator assembly within the hopper for agitating the ice, said agitator assembly having spoke-like agitator members for churning through the particulate ice, the improvement which comprises agitator means secured to and extending between said spokes for wiping said interior wall means of the storage hopper, said agitator means being fabricated of pliable material so as to be bodily deformable by said particulate ice thereby minimizing tunneling in the particulate ice.

3,940,117

AGITATING APPARATUS

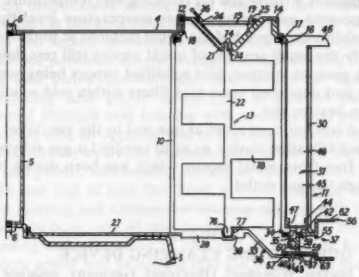
Charles Jonathan Briggs, London, England, assignor to Berger-Jenson & Nicholson, Ltd., London, England

Filed June 18, 1974, Ser. No. 480,355

Claims priority, application United Kingdom, June 22, 1973, 29650/73

Int. Cl.² B01F 9/12

U.S. Cl. 259—58 3 Claims



1. An apparatus for mixing and dispensing liquids comprising a central support structure, a support member rotatably mounted on said support structure, a plurality of dispensing containers mounted on said support member and fixed relative thereto, a drive member mounted on the support structure and fixed relative thereto, a drive transmission device located adjacent the upper end of each container and rotatably mounted thereon, each of said drive transmission devices engaging said drive member, a stirring device depending from each drive transmission device into its associated container, and a removable closure member in each drive transmission device, wherein the apparatus is constructed and arranged so that when the support member is rotated each of the drive transmission and stirring devices is rotated by the drive member relative to the dispensing containers.

3,940,118

BLADE LIFTER FOR INSTALLATION INSIDE A REVOLVING DRUM

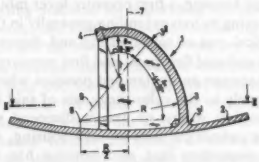
Otto Heinemann, Ennigerloh, and Rainer Philipp, Ahlen, both of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed Aug. 31, 1973, Ser. No. 393,647

Claims priority, application Germany, Oct. 17, 1972, 7238023

Int. Cl.² B01F 9/06

U.S. Cl. 259—89 11 Claims



1. A rigid blade lifting member for installation on a revolving drum comprising a mounting plate member for attachment to said drum to rotate therewith; and a blade shell joined at one end to and extending from said mounting member, said shell having at its other end a free rim forming a scoop edge, said shell being curved continuously from its one end to its other end, the radius of curvature of said shell from its one end to a point between its ends closer to said other end than to said one end being greater than the radius of curvature of said shell from said point to said other end.

3,940,119

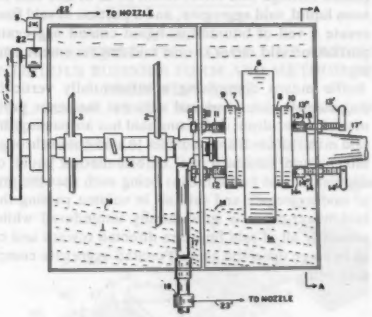
ROTOR GUN FOR THE AIR PLACEMENT OF GRANULAR AND CEMENTITIOUS MATERIALS

Ian M. Ridley, 34 Azalea Court, Plainview, N.Y. 11803

Filed June 6, 1974, Ser. No. 477,155

Int. Cl.² B28C 5/06

U.S. Cl. 259—151 2 Claims



1. Rotor gun means for the air placement of granular and cementitious material, comprising,

a mixing chamber for granular and cementitious materials,

a driven shaft mounted parallel to the bottom of said chamber,

a rotor freely floating on said shaft in predetermined space relation in said mixing chamber,

said rotor comprising a motor driven wheel in the central portion of said chamber, said wheel having a plurality of apertures equally spaced about said rotor wheel, said apertures being adapted to pick up said material,

and a source of high pressure air stream connected to blow said material from said apertures as said apertures pass said high pressure air stream, into an outlet nozzle without any bends or turns in the path of the air stream,

a pair of resilient sealing pads, said rotor wheel passing between the pair of sealing pads, and means to adjustably mount at least one of said sealing pads in place, comprising a pair of steel plates one each on the outer sides of said pads and adjustable screw operated means for adjusting the pressure of one of said plates against one of said pads.

3,940,120

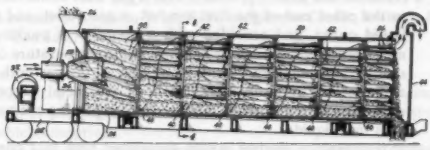
DUST FREE ASPHALT PRODUCTION METHOD AND APPARATUS

John S. Miller, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 5, 1974, Ser. No. 494,787

Int. Cl.² B28C 1/22, 5/46

U.S. Cl. 259—158 6 Claims



2. The improvement substantially reducing the amount of fines emitted into the atmosphere by apparatus preparing asphalt paving material, said apparatus comprising:

a rotatable substantially horizontal mixer-drum having an inlet at one end and an outlet at the opposite end;

means inserting bituminous liquid and aggregate containing fines into said mixer-drum;

means causing hot air to pass through said mixer-drum entering at said inlet and exiting at said outlet; and,

a plurality of buckets disposed along the length of said mixer-drum in rows substantially equally spaced around the inside periphery of said mixer-drum, said plurality of buckets being so disposed as to lift and drop said bituminous liquid and aggregate containing fines in said mixer-drum as said mixer-drum is rotated and said hot air is passed through said mixer-drum so as to mix said bituminous liquid, said aggregate, and a portion of said fines and create a veil of bituminous liquid coated aggregate in a portion of said mixer-drum; said improvement comprising:

a. baffle means comprising a substantially vertical, flat, ring-shaped plate disposed adjacent the inner periphery of said mixer-drum deflecting said hot air passing through said mixer-drum from said inlet to said outlet through said mixer-drum into said veil of bituminous liquid coated aggregate, said baffle means being such that the progress of said aggregate and said air in volume passing through said mixer-drum is substantially unhindered while substantially all of said fines are directed toward and caused to impinge upon the asphalt coated aggregate comprising said veil.

3,940,121
METAL VAPOR-TRAPPING SYSTEM

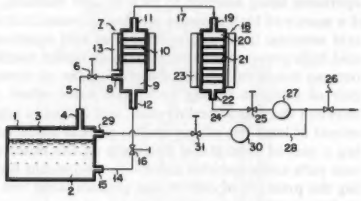
Masayoshi Ohno, and Osamu Ozaki, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sept. 24, 1973, Ser. No. 399,919

Claims priority, application Japan, Sept. 26, 1972, 47-96505

Int. Cl. C21b *61/00*

U.S. Cl. 266—15 **6 Claims**



1. A metal vapor-trapping system for trapping vapors of liquid metal from a gaseous mixture consisting of said vapors and another gas which comprises:

a tank for holding a liquid metal heated to a prescribed temperature and a gaseous mixture consisting of vapors of said liquid metal and said another gas;

a first conduit connected at one end to the gas outlet of the tank;

a condensation device provided with a gas inlet connected to the other end of the first conduit, a gas outlet, and a liquid outlet, and provided with a plurality of packing members for progressively decreasing the temperature of said gaseous mixture from the gas inlet to the gas outlet and thereby trap substantially all of the metal vapors contained in the gaseous mixture by condensing the vapors into liquid;

first temperature control means associated with said condensation device for controlling the temperature of said gaseous mixture such that even when cooled, the gaseous mixture has its temperature near the gas outlet maintained at a higher level than the solidification point of the liquid metal;

a solidification device having a gas inlet and a gas outlet, and provided with a plurality of filters for progressively decreasing the temperature of said gaseous mixture conducted from said condensation device and passing through said filters from said gas inlet toward said gas outlet;

second temperature control means associated with said solidification device for controlling the temperature of said gaseous mixutre and for reducing said temperature of said gaseous mixture to a lower temperature level than the solidification point of the liquid metal so as to thereby solidify the small amount of metal vapors still remaining in the gaseous mixture, said solidified vapors being separated and deposited upon said filters within said solidification device; and

a second conduit connected at one end to the gas outlet of said solidification device so as to conduct a gas substantially free from metal vapors which has been drawn out through the gas outlet.

3,940,122
QUICK ACTING CLAMPING DEVICE

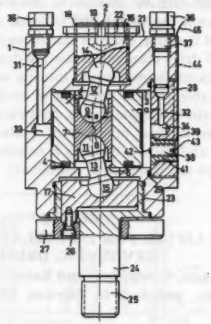
Wolfgang Janzen, Wilnsdorf, Obersdorf, Germany, assignor to Amsted-Siemagkette GmbH, Sieg, Germany

Filed Apr. 16, 1974, Ser. No. 461,424

Claims priority, application Germany, Apr. 18, 1973, 2319686

Int. Cl.² B23Q *3/06*

U.S. Cl. 269—23 **3 Claims**



1. Quick acting clamping device, such as for clamping tools, workpieces or devices on machine tools, comprising a cylindrical housing, an abutment mounted in said housing, a first part positioned within said housing for transferring clamping movement and being spaced from said abutment in the axial direction of said housing, a first pressure lever mounted in said housing and having its axis extending generally in the direction of the cylindrical axis of said housing and disposed between said abutment and said first part, said first pressure lever being displaceable between an unclamped position where its axis is disposed obliquely to the cylindrical axis of said housing and a clamped position where its axis is disposed substantially parallel to the cylindrical axis of said housing, wherein the improvement comprises that said housing has a first bore therethrough with the axis of the first bore extending transversely of the cylindrical axis of said housing, a piston positioned within said first bore for displacement therein in the axial direction of said first bore, said piston having an axial length less than the axial length of said bore, said piston having a second bore therethrough extending in the direction of the cylindrical axis of said housing, said first part being located within said second bore, one end of said abutment facing one end of said first part, a second part mounted within said hous-

ing and on the opposite side of said piston from said abutment and one side of said second part facing the other end of said first part, a second pressure lever having its axis extending generally in the direction of the cylindrical axis of said housing and disposed between the one side of said second part and the other end of said first part, said second pressure lever being displaceable between an unclamped position where its axis is disposed obliquely to the cylindrical axis of said housing and a clamped position where its axis is disposed substantially parallel to the cylindrical axis of said housing, said piston being displaceable through said first bore for displacing said first part in the axial direction of said first bore for moving said first and second pressure levers between the unclamped and clamped positions, means arranged in said housing for displacing said piston hydraulically, said means for hydraulically displacing said piston comprising a pair of passageways formed through said housing with each of said passageways opening into an opposite end of said first bore for introducing a pressurized hydraulic medium thereto for the displacement of said piston, said housing having an opening therein aligned with one end of said first bore, a cover sealingly secured to said housing and closing the opening aligned with the end of said first bore, one of said passageways extends through said housing and said cover to one end of said first bore, and a hollow screw bolt extending into the one of said passageways extending through said housing and cover for securing said cover to said housing.

3,940,123

CUTTING MACHINE CLAMPING DEVICE

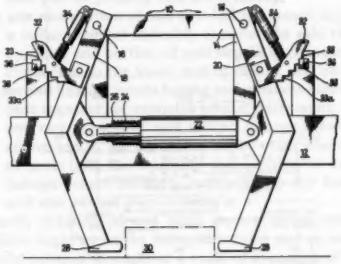
Klaus Herbener, Bruchkobel, and Ewald Schmitt, Bischiffsheim, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Oct. 2, 1974, Ser. No. 511,368

Claims priority, application Germany, Oct. 18, 1973, 2352295

Int. Cl.² B23K *7/10*

U.S. Cl. 266—23 R **8 Claims**



1. A cutting machine clamping device comprising, in combination, a cutting machine for separating workpieces into individual segments, said cutting machine including a cutting unit, mounting means for mounting said cutting unit above the workpiece to traverse the width of the workpiece whereby the cutting unit may cut therethrough, said mounting means including rail means for being disposed over and across the workpiece and on which the cutting unit may travel, said mounting means further including a workpiece clamping mechanism for detachably securing said cutting unit to the workpiece at a fixed position along the length thereof, said clamping mechanism including a pair of opposed levers, clamping means on an end of each of said levers, pivotal securing means mounting said levers for movement toward and away from each other along a predetermined path whereby said clamping means may be moved into and out of engaging contact with the workpiece, barrier means for movement into said path whereby the movement of said clamping levers away from the workpiece is limited to minimize the subsequent return movement of said clamping levers when its clamping means later re-engages the workpiece, said barrier means being adjustable for adjustably preselecting the distance of movement permitted by said clamping levers whereby the distance of movement may be controlled in accordance with the width of the workpiece, said barrier means including a toothed segment mounted on at least one of said clamping levers, a stationary stop member disposed in the path of movement of one of the teeth on said segment, and a lifting cylinder connected to said toothed segment for adjusting the position of said segment whereby a preselected tooth may be disposed for contacting said stop member.

3,940,124

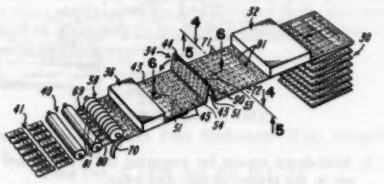
MULTI-PLY LOTTERY TICKETS OR LIKE ARTICLES, CONTINUOUS BUSINESS FORM AND METHOD FOR PRODUCING SAME

Edward L. Johnsen, 12 Fox Meadow Lane, Wayland, Mass. 01778

Filed Jan. 15, 1974, Ser. No. 433,461

Int. Cl. B65h *45/00;* **B42d** *42/00*

U.S. Cl. 270—61 F **12 Claims**



1. A method of producing a series of interconnected blanks suited for processing into individual lottery tickets or like articles comprising the steps of:

a. continuously advancing an endless web of material having upper and lower surfaces toward an accumulating station;

b. transversely subdividing said web into a series of interconnected blanks;

c. transversely trisecting each blank into a set of three contiguous panels each spanning the full width of the web;

d. selectively applying an adhesive to a portion of both surfaces of the web;

e. accumulating said series of interconnected blanks for further processing;

f. continuously advancing said interconnected blanks toward an indicia applying station;

g. applying original indicia directly to an upper surface of at least one panel of each set of contiguous panels; and

h. accordion folding and permanently bonding each set of contiguous panels in registered zig-zag relationship, thereby providing a series of interconnected multi-ply lottery tickets or like articles.

3,940,125

PICKING AND TRANSPORTING MEANS FOR FABRIC SECTIONS AND THE LIKE

Kenneth O. Morton, Troy, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Filed May 17, 1974, Ser. No. 471,029

Int. Cl.² B65H *3/06, 3/32*

U.S. Cl. 271—10 **30 Claims**

5. A picking apparatus for nipping and lifting a limp ply, which comprises

a. a movable gripping member movable about an axis and having an arcuate ply gripping surface,

b. lifting means supporting said member for rotary movement of its gripping surface about said axis,

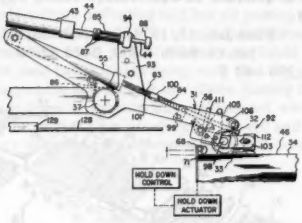
c. means forming a ply stripping element extending from a point outside the arcuate surface of the gripping member to a point within the projected configuration of the member and disposed at a relatively shallow angle with the gripping surface of the member at the point of intersection of said stripping element with said gripping surface,

d. ply retaining shoe means positioned to yieldably press upon the ply stack, adjacent said ply gripping member, whereby ply material displaced by movement of said member is caused to buckle into a wave in the region between said member and said shoe, and

e. said stripping element and said shoe means forming an accumulation cavity for receiving said wave.

16. Apparatus for separating and transporting limp plies one at a time from a stack thereof, which comprises

a. means for gripping and lifting one edge portion of a top ply of the stack,



b. hold-down means for engaging the stack below the top ply in the region of said one edge,

c. a plate-like shutter means movable into interposition below said top ply and above the remainder of the stack, to fully separate said top ply from said stack,

d. means guiding said plate-like shutter for progressive interposing, longitudinal movement, entering adjacent said one edge and progressing toward and beyond the opposite edge,

e. means for reciprocating said plate-like shutter between an interposed position, between said stack and top ply, and a predetermined destination position, and

f. means independent of said gripping and lifting means effective to retain said top ply on said shutter during movement of the shutter and the ply to said destination position.

3,940,126

SHEET HANDLING MECHANISM

John William Douglas Cooper, Hitchin, England, assignor to Xerox Corporation, Stamford, Conn.

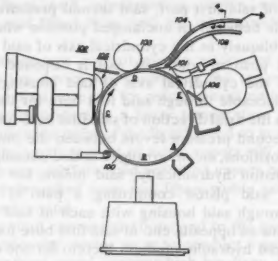
Filed June 11, 1974, Ser. No. 478,209

Claims priority, application United Kingdom, Dec. 21, 1973, 59537/73

Int. Cl.² B65H *29/56*

U.S. Cl. 271—174 **1 Claim**

1. The combination of an electrostatographic reproduction machine having means defining a photoconductive surface, means for charging the photoconductive surface, means for exposing the photoconductive surface to form an electrostatic latent image on the surface, means for developing the latent image, and means for transferring the developed image to a transfer sheet, with an improved stripping mechanism, the stripping mechanism comprising means for separating the leading edge of the transfer sheet from the photoconductive surface, a guide disposed adjacent to the separating means for guiding the transfer sheet, means for maintaining the guide at a reference voltage sufficient to set up an electrostatic attraction between the transfer sheet and guide after the leading edge of the transfer sheet has been separated from the photoconductive surface, means for forming a plurality of air gaps between the transfer sheet and the guide during movement of the transfer sheet over the guide, means separated from and extending along and beneath the guide for supporting the transfer sheet in the event the electrostatic attraction is insufficient to attract the transfer sheet to the guide, and means for preventing the transfer sheet from being electrostatically attracted to the supporting means during movement between the guide and the supporting means.



3,940,127

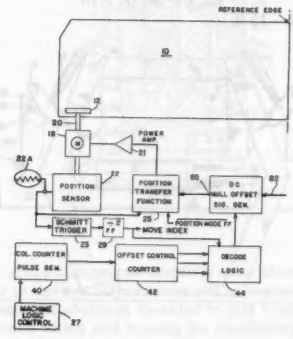
PROGRAMMABLY ALTERABLE INCREMENTING SYSTEM

Neil J. Petusky, Norristown, and Ronald V. Kadyszewski, Aston, both of Pa., assignors to Decision Data Computer Corporation, Horsham, Pa.

Filed Apr. 8, 1974, Ser. No. 458,517

Int. Cl.² B65H *5/06*

U.S. Cl. 271—266 **6 Claims**

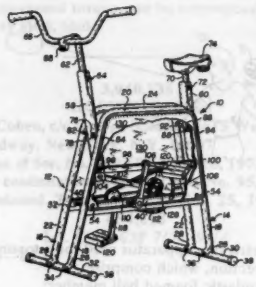


2. An incrementing system for punch cards, or like sheet material, said incrementing system being adapted to incrementally index said punch card or sheet material through a work station, comprising first means adapted to operatively engage the surface of said punch card or sheet material to thereby advance said card or sheet material through said work station, control means operatively connected to said first means to cause said punch card or sheet material to be selectively advanced a predetermined distance through said work station, and means operatively connected to said control means and adapted when set to introduce one or more predetermined corrective factors to compensate for differences in intended and actual incremental displacements introduced in the advancement of said punch card or sheet material through said work station said differences being brought about by changes in the dimensions of the operative components of said first means and/or in said punch card or sheet material.

3,940,128
EXERCISING APPARATUS

Bernardo P. Ragone, Lido Beach, N.Y., assignor to Vitamaster Industries, Inc., Brooklyn, N.Y.

Filed Jan. 6, 1975, Ser. No. 538,604
Int. Cl.² A63B *23/04*
U.S. Cl. 272—73 **19 Claims**



1. An exercising apparatus comprising:
a. a frame;
b. a pair of laterally spaced posts each pivotally mounted on said frame in a substantially upright position, each of said posts having upper and lower end portions;
c. handlebar means mounted on the upper end portion of one of said pair of posts;
d. seat means mounted on the upper end portion of the other one of said pair of posts;
e. drive means rotatably mounted on said frame;
f. a ring eccentrically mounted on said drive means for conjoint rotation therewith;
g. first linkage means having end portions connecting one of said pair of posts to said drive means;
h. one end portion of said first linkage means terminating in a collar member slideably mounted on said ring and the opposite end portion of said first linkage means pivotally connected to the lower end of one of said pair of posts;
i. second linkage means having end portions connecting said post together for conjoint pivotal movement;
j. one end portion of said second linkage means pivotally connected to the lower end of the other one of said pair of posts and the opposite end portion of said second linkage means pivotally connected to the lower end of said one of said pair of posts;

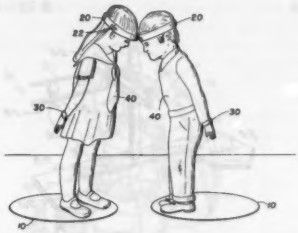
whereby rotation of said drive means causes said posts to oscillate together in the same directions and in substantially parallel relation throughout a cycle of operation of said apparatus.

3,940,129
GAME OF BALANCE

John A. Franco, Daly City, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 4, 1974, Ser. No. 520,280
Int. Cl.² A63F *9/00*; A63B *71/04*
U.S. Cl. 273—1 R **2 Claims**

1. A game device for playing a party game with two competing players comprising the following equipment:
a pair of headbands each formed of a strip of foam material enclosed by a flexible sheeting, with a fastening tab mounted externally adjacent one end of each strip for fastening to the other end of the said strip about a players head,
a pair of flexible wrist bands each formed of flexible sheeting in the form of a strip and each fitted with fastening means for joining the ends of each strip together about a pair of wrists of a player, and
a pair of circular discs, with both discs being of the same diameter, and with each disc being of a size to enable a player to place both feet upon a disc resting on a floor, such that each player may stand on one of the two discs, with the discs located in general proximity to each other,

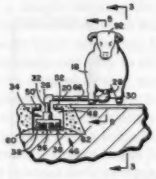


with the two players fitted with the headbands and with the hands of the players fastened behind their backs in the wrist bands, and each of the players may attempt to push the other player out of the area bounded by the disc upon which he is standing by pushing his headband against the headband of the opposing player.

3,940,130
BULL FIGHTING GAME

William F. Fawcett, 1839 Port Seabourne Way, Newport Beach, Calif. 92660

Filed Oct. 3, 1974, Ser. No. 511,785
Int. Cl.² A63B *67/00*
U.S. Cl. 273—1 E **12 Claims**



1. A simulated bull fight game comprising:
a simulated bull's figure;
a first support means for holding said simulated bull's figure;
an area in proximate relationship to said bull's figure adapted for a participant taking the part of a matador;
a cape for said participant;
optical sensor means in said bull to register the position of said cape in a participant's hand; and,
means to move said bull on said support means with respect to said participant in a manner simulating the movement of a bull in a bull ring so that a participant can partake with a cape in a simulated bull fight.

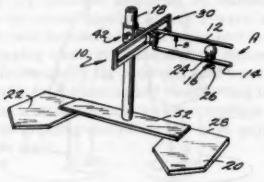
3,940,131
BATTING PRACTICE DEVICE

Ebba J. St. Claire, Jr., 52 Champlain Ave., Whitehall, N.Y. 12887

Filed Oct. 8, 1974, Ser. No. 513,176
Int. Cl.² A63B *69/40*
U.S. Cl. 273—26 R **10 Claims**

1. A batting device comprising
means for assisting a baseball player in developing a level swing of a conventional baseball bat, said means including

a pair of elongated generally horizontally extending vertically spaced parallel arms including an upper arm and a lower arm, said arms being vertically spaced a distance sufficient to allow the passage of the bottle-shaped portion of a horizontally disposed conventional baseball bat therebetween, said arms substantially lying in a single



vertical plane, said arms having no vertically extending connecting member at at least one of the ends thereof thereby forming an open end,

means located on said lower arm for supporting a baseball between said arms, and

means for supporting said pair of arms in their generally horizontally extending position.

3,940,132

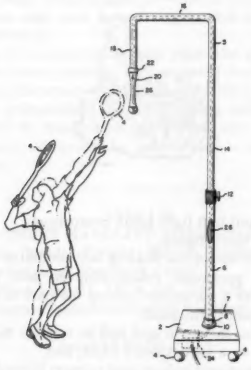
TENNIS SERVICE INSTRUCTIONAL DEVICE

John S. Lopatto, III, 103 Gaylord Ave., Plymouth, Pa. 18561

Filed June 13, 1974, Ser. No. 479,183

Int. Cl.² A63B *61/00*

U.S. Cl. 273—29 A **5 Claims**



1. An apparatus for use as an aid in learning the service stroke in tennis comprising,

a substantially vertical overhead support,

supple flexibly yieldable tubular means suspended from said support,

said tubular means having a lower open end for seating against the uppermost portion of the surface of a tennis ball placed at a height above a player's head,

and means for applying suction to the other end of said tubular means with a force which is just sufficient to maintain the weight of the ball in said open end but to be overcome to release the ball by impact of a racquet striking against the ball during a service stroke.

3,940,133

BALL RETRIEVING APPARATUS

Benny I. Civita, Forest Hills, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed July 29, 1974, Ser. No. 492,689

Int. Cl.² A63B *43/02*

U.S. Cl. 273—58 C **7 Claims**

1. A ball retrieving apparatus used for a tossing of a ball in a forward direction, which comprises:

a. a thermoplastic foamed ball member;

b. an elastic rubber band;

c. an adjustable wrist support band;

d. a means for attaching said elastic rubber band to said adjustable wrist support band; and

e. a means for pivotally and detachably mounting said thermoplastic foamed ball member to said elastic rubber band.

3,940,134

HOCKEY STICK HANDLE DEVICE

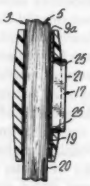
Leo M. Bieganowski, 81 St. Charles Ave., Dorval, Quebec, Canada

Filed Dec. 5, 1973, Ser. No. 422,084

Claims priority, application Canada, Dec. 8, 1972, 158820

Int. Cl.² A63B *59/14*

U.S. Cl. 273—67 A **5 Claims**



1. In a hockey stick including an elongated, generally-longitudinally-flexible handle having a substantially rectangular cross-section and a laterally-extending terminal blade extending vertically into the general plane of the rectangularly cross-sectioned handle, the improvement comprising, in combination, manually-operable, torque-increasing means optionally adjustable at a player's option during play when effecting a puck-propelling movement in a combined rotary and sweeping manipulation of the hockey stick, said torque-increasing means comprising a relatively short rigid sleeve member including an inner surface portion circumposed about the handle and an outer surface portion to be gripped by the player and being of a length short enough not to interfere with the general-longitudinal-flexibility of the hockey stick handle, said sleeve member being constructed and arranged to be optionally freely slidable along and non-rotatably mounted on said hockey stick handle and optionally-positionable therealong prior to a puck-propelling manipulation and increasing the hockey stick cross-section at the position at which said sleeve member is disposed, said sleeve member having means for

manually-displacing at least one inner surface portion of said sleeve member for frictionally engaging and locking the sleeve member relative to a confronting portion of said hockey stick handle so the sleeve member does not freely slide along the hockey stick handle whereby prior to effecting a puck-propelling manipulation the player can readily adjustably position the sleeve member and is afforded increased torque-generating means about the longitudinal axis of the hockey stick handle so that the increased torque can be correspondingly directed to the hockey stick blade.

3,940,135

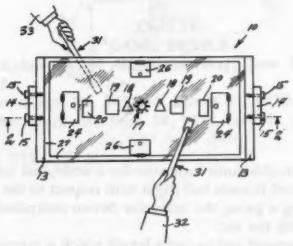
HOCKEY GAME

Samuel W. Cohen, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Continuation of Ser. No. 289,609, Sept. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 95,814, Dec. 7, 1970, abandoned. This application Mar. 25, 1974, Ser. No. 454,618

Int. Cl.² A63F 7/06, 9/14

U.S. Cl. 273—85 F **14 Claims**



1. A hockey game comprising upper and lower plates, means for mounting said plates on peripheral sides thereof with the inner face of one plate in an opposing relationship to the inner face of the other plate to define a hollow board forming an arena simulating a hockey court, at least the upper plate being transparent, a goal in the space between said plates toward each end position of the arena, said opposing inner faces of said plates having a maximum uniform spacing in the arena area surrounding the goals and a smaller spacing inwardly toward the center of the board, a plurality of team members disposed slidably within the arena, said team members including a goalie of a height greater than said smaller spacing towards the center of the arena so that the movement of the goalie is confined to movement within the larger area surrounding the goals and prevented in the area of smaller spacing by contact of the goalie with the portion of a plate defining the area of smaller spacing, the heights of all of said team members other than said goalie being less than the space between the opposing inner faces of the plates over the entire area of said arena, each said team member including magnetically attractable material, magnetic actuator means having a planar surface adapted to glide on the outer surface of one of said plates for attracting a team member when it is aligned with the magnetically attractable material of a said team member, movement of the actuator means on the outer surface of a plate causing the magnetically attracted team member to move across the corresponding inner face of the plate with the actuator means as it is moved, and a non-magnetic puck for gliding on the inner surface of the lower plate adapted to be struck by a said team member as it is moved by a said actuator means.

3,940,136

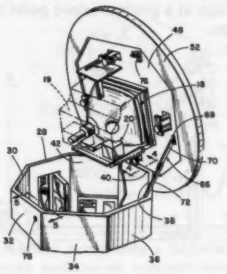
AMUSEMENT DEVICE

Robert Ralph Runte, Buffalo Grove, Ill., assignor to Fascination, Ltd., Des Plaines, Ill.

Filed July 17, 1974, Ser. No. 489,081

Int. Cl.² A63F 3/00

U.S. Cl. 273—85 R **6 Claims**



1. An amusement device comprising, an upright support adapted for mounting on a floor, a housing secured to and supported by the upper portion of the support at a selected height above the floor, said housing being open at its uppermost position, a table top hingedly connected to the housing to allow the top to be raised for exposing the interior of the housing, said top having a screen aperture in its center, a cathode ray tube secured to the top and having a screen positioned adjacent to the screen aperture to allow the screen to be viewed exteriorly of the top, electronic circuitry mounted on the interior surface of the top and electrically connected to the cathode ray tube to reproduce an image of a ball moving across the screen and a plurality of paddle images for giving the appearance of a paddle striking the ball and returning it, a plurality of manual control devices mounted on the top and accessible from the exterior of the top to manipulate selected portions of the electronic circuitry to move the paddle images on the screen, a coin control device mounted on the housing and electrically connected to the electronic circuitry to control the operation of electronic circuitry for the production of the images on the screen, a lock for releasably locking the top to the housing to control access to the interior of the housing, each of the manual control devices including a mounting plate positioned in the table top, each mounting plate covered by a portion of the top, a shaft aperture positioned below a portion of the mounting plate, a U-shaped bracket secured to the mounting plate and a portion of the electronic circuitry supported on the U-shaped bracket, a knob shaft rotatably mounted in the mounting plate and the U-shaped bracket and extending above the table top, said knob shaft connected to the portion of the electronic circuitry on the U-shaped bracket for controlling selected portions of the circuitry, and a knob mounted on the shaft exteriorly of the table top for operating the shaft, whereby a player turns the knob to move selectively an image across the screen.

3,940,137

POLE VAULTING GAME APPARATUS

Cecil R. Taylor, 1232 S. Spring St., Independence, Mo. 64055

Filed Apr. 28, 1975, Ser. No. 572,467

Int. Cl.² A63F 9/02

U.S. Cl. 273—85 C **10 Claims**

1. A pole vaulting game apparatus comprising:

a. a base forming an elongated horizontal track,

b. a carriage movable along said track,

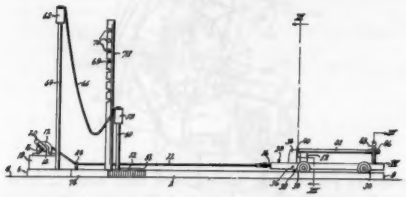
c. operating means manually operable to advance said carriage along said track,

d. a pole carried by said carriage in a normally horizontal position but being pivoted to said carriage for upward and

forward pivotal movement in the direction of carriage advancement,

e. a vaulting piece adapted to be frictionally mounted on the free end portion of said pole and to be released transversely therefrom when the friction of its mounting is overcome,

f. cooperating trip members carried by said base and said carriage and operable to pivot said pole upwardly relative to said carriage at a predetermined point in the travel of said carriage,



g. a stop member operable to arrest the upward pivotal movement of said pole before it reaches a vertical position, whereupon said vaulting piece is dislodged from said pole and propelled therefrom in an upward trajectory, and

h. a horizontal bar extending transversely of said base thereabove, the object of the game being to cause said vaulting piece to pass over said bar.

3,940,138

RACING GAME DEVICE

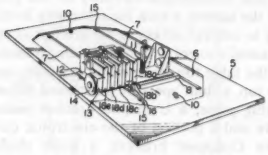
Shikanosuke Ochi, Tokyo, Japan, assignor to Kabushiki Kaisha Sega Enterprises, Tokyo, Japan

Filed Nov. 19, 1974, Ser. No. 525,280

Claims priority, application Japan, Sept. 6, 1974, 49-101908

Int. Cl.² A63F 9/14

U.S. Cl. 273—86 B **6 Claims**



1. A racing game device comprising a horizontal racing course plate, a plurality of racing elements on said racing course plate having magnets therein, a horizontally extending support table positioned beneath said racing course plate and having a central recess therein, a pair of parallel rails extending across said central recess, a traveling base frame mounted on said parallel rails for horizontal movement back and forth along said rails, a rotatable table pivotally mounted on said traveling base frame and a traveling motor fixedly mounted on said traveling base frame and having a single driving wheel driven thereby and engaged with and running along said support table for moving said traveling base frame and said rotatable table along said rails in one direction, then pivoting said rotatable table in a curvilinear movement around the one end of the parallel rails and then moving the traveling base frame and said rotatable table along said rails in the other direction, and finally pivoting said rotatable table in a curvilinear movement around the other ends of the parallel rails, whereby the rotatable table moves in a path made up of straightaways and curves joining the straightaways, a plurality of magnet means, one corresponding to each receiving element, positioned side by side on said rotatable table in a direction transverse to the direction of said path and mounted on said rotatable table for movement back and forth on said table in the direction of said path and electric motor means coupled to said magnet means for randomly driving said magnet means in said movement.

3,940,139

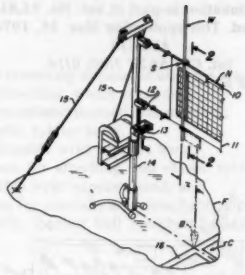
OUT-OF-BOUNDS WAND FOR VOLLEYBALL NET AND SUPPORT STRAP

Paul J. Barnes, 1859 S. Madison, Denver, Colo. 80210

Filed Apr. 28, 1975, Ser. No. 572,158

Int. Cl.² A63B 71/00

U.S. Cl. 273—95 R **9 Claims**



1. An out-of-bounds indicator for a volleyball net, to indicate an out-of-bounds ball flight with respect to the volleyball court during a game, the indicator device comprising in combination with the net:

a. an elongated rod having a length which is greater than the vertical dimension of the volleyball net,

b. a narrow, elongated, elastic strap having an aperture at each end sized to fit said elongated rod, said member while in a relaxed condition having a length less than the vertical dimension of said volleyball net, and

c. said rod being attached in a vertical position to said net by placing the rod in a vertical position alongside one side of the net and the strap on the opposite side of said net paralleling the rod with said rod being threaded through said apertures above and below said net and with a substantial portion of the rod extending above the top edge of the net.

3,940,140

VIBRATORY BOARD GAME APPARATUS

Burton C. Meyer, Downers Grove; Gordon A. Barlow, Skokie, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 30, 1974, Ser. No. 537,083

Int. Cl.² A63F 3/00

U.S. Cl. 273—109 **18 Claims**

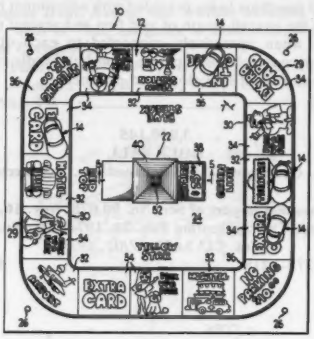
1. A board game apparatus, comprising:

a plurality of playing pieces, at least one for each player of the game;

board means including a playing surface having means defining a plurality of individual stations defining a playing piece path of travel, the stations extending along substantially the entire playing piece path of travel and at least some of the stations being destination stations having indicia representative of different locations; and

manually selectively actuatable drive means associated with said pieces for stopping and starting the movement of all

of said playing pieces simultaneously along the playing piece path of travel from one station to another in an



attempt to have a player's or an opponent's playing piece stop at a particular station.

3,940,141

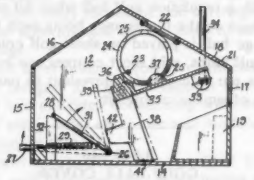
GAME DEVICE

Frank Gybowski, 34 Edgewood Way, New Haven, Conn. 06515

Division of Ser. No. 343,356, March 21, 1973, abandoned. This application Sept. 26, 1974, Ser. No. 509,447

Int. Cl.² A63F 5/04

U.S. Cl. 273—143 R 8 Claims



1. A game device having a stationary housing, comprising:

a pair of spaced apart, upstanding support members at opposite ends of the housing;

a first bar mounted horizontally on and between said support members;

at least one open-ended, hollow cylinder supported on said first bar with the inner surface of said cylinder in contact with said first bar, said cylinder having an inside diameter substantially greater than the diameter of said first bar and said cylinder having circumferentially disposed indicia on its outer surface;

player actuated mechanical means for striking the exterior surface of said cylinder, whereby said cylinder is caused to swing freely and eccentrically on and around said first bar;

mechanical means for braking said cylinder while said cylinder is swinging freely on and around said first bar to arrest the movement of said cylinder and place said indicia in a significant position relative to the housing; and

manually actuated means for moving said braking means into engagement with said cylinder.

3,940,142

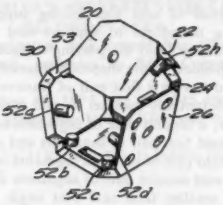
FOLD UP DIE CONSTRUCTION

Henry Hinz, Huntington, and Benjamin Stopek, West Hempstead, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,112

Int. Cl.² A63F 9/04

U.S. Cl. 273—146 19 Claims



7. A die member comprising a foldable flat sheet having inner and outer surfaces on opposite sides thereof and six integrally formed sections adapted to respectively define facets of a generally cubical die; said sheet including foldable joint means integrally formed therewith for foldably joining each of said sheet sections to at least one other sheet section; said sheet sections being arrayed in a predetermined pattern whereby upon folding of at least some of said sections through 90° about said joint means, and in a direction towards the inner side of said sheet, the sheet sections form the facets of the die; cooperating means formed on at least some of said sheet sections for securing the sections together in a completed folded die configuration; and guide means formed on the inner side of said sheet on at least some of said sections for guiding the sections into mating relation with one another during folding, said guide means comprising a plurality of guide pins extending generally perpendicularly from the inner side of said sheet on at least some of said sheet sections and being arrayed in a predetermined pattern to define guide passages therebetween which receive and guide the pins with respect to one another.

3,940,143

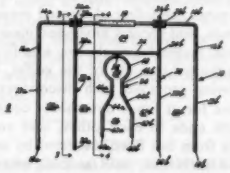
GOLF GAME DEVICE

Owen E. Jenkins, 3318 River Forest Drive, Fort Wayne, Ind. 46805

Filed Dec. 12, 1974, Ser. No. 531,998

Int. Cl.² A63B 69/36, 57/00

U.S. Cl. 273—178 R 6 Claims



1. A game playing framework adapted for placement on a playing surface and having an open side receiving a ball comprising,

a first open-sided frame having a pair of sides connected to and transversely spaced by a cross end member and being adapted to rest on a playing surface and having a plurality of depending support members to support and space said frame a predetermined distance from the playing surface,

a second open-sided frame being placed interiorly of said first open-sided frame and having a pair of equal length parallel legs, said legs being connected intermediately of their length and transversely spaced by a cross arm,

one end of each of said legs having a hook formed thereon with the open side of each of the hooks straddling and frictionally engaging said cross end member to provide for vertical adjustment of said second frame with respect to said cross end member,

the other ends of said legs having supporting members depending therefrom to support said legs a predetermined distance from the playing surface,

a third open-sided frame disposed interiorly of said second frame and having a first pair of transversely spaced segments substantially parallel to said legs and defining an open side, a second pair of segments connected respectively to said first pair of segments and converging therefrom, a third pair of inclined segments connected respectively to said second pair of segments and converging at an angle smaller than said first angle and being transversely spaced a predetermined distance to form a ramp for game balls, a ring section being connected to said third pair of segments to form a cup-shaped retainer for golf balls propelled through the areas defined by said first and second pair of segments and over the ramp formed by said third pair of segments.

3,940,144

GOLFER'S AID

Harold G. Dickie, 3830 Kingsway Drive, Highland, Mich. 48031

Filed Nov. 27, 1972, Ser. No. 309,703
Int. Cl.² A63B *69/36*
U.S. Cl. 273—183 B **10 Claims**

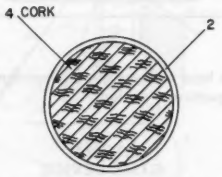
1. A golfer's aid device, comprising flexible substantially non-stretchable first and second elongated members physically detached from each other, said first and second elongated members being of unequal lengths as to have said first elongated member substantially shorter than said second elongated member, said first elongated member having first and second ends, said second elongated member having third and fourth ends, means for anchoring said first and third ends respectively adjacent one hip of the golfer, said second and fourth ends being provided with disconnectable connecting means effective for at times detachably connecting said second and fourth ends to each other, said connecting means being separate from but fixedly carried by said first and second elongated members, said second member being of a length such as to provide first and second generally upright portions interconnected by a lower disposed intermediate bight portion disposed adjacent the golfer's feet when said first and third ends of said first and second members are anchored and said second and fourth ends of said first and second elongated members are operatively connected to each other and said elongated members are hanging freely, said first upright portion being effective to combine with said first elongated member when operatively connected to each other by said connecting means to form a length functionally equal to the length of said second upright portion, said second elongated member being adapted when said second and fourth ends are operatively connected to each other to be placed under the golfer's feet to both limit the spread of the golfer's feet and to maintain the said golfer's knees flexed, at least one of said elongated members being provided with adjustment means for adjusting the overall length of said first and second elongated members when operatively connected to each other, said adjustment means being separate from but fixedly carried by said at least one of said elongated members.

3,940,145

GOLF BALL

Joseph A. Gentiluomo, 1456 Belmont Ave., Schenectady, N.Y. 12308

Continuation-in-part of Ser. No. 90,078, Nov. 16, 1970, abandoned. This application Feb. 28, 1974, Ser. No. 446,812
Int. Cl.² A63B *37/02, 69/36*
U.S. Cl. 273—218 **12 Claims**



1. A medium range golf ball, comprising impact damping means for dissipating golf club impact energy, and patterned surface contouring of such design and dimensions that when operating in conjunction with said impact damping means will yield a ball that can be propelled with regulation golf clubs an on-the-fly distance of one-quarter to one-half the distance obtained with a regulation golf ball when hit under identical conditions; said on-the-fly distance being such that when said medium range ball is played on short golf courses with said regulation golf clubs, said short courses can be converted to operate on a par rating basis equivalent to par of regulation golf courses of similar complexity.

3,940,146

GOLF BALL COVER

James F. Little, Greenville, R.I., assignor to Uniroyal Inc., New York, N.Y.

Continuation-in-part of Ser. No. 112,488, Feb. 3, 1971, abandoned. This application Aug. 21, 1972, Ser. No. 282,625
Int. Cl.² A63B *37/12;* **C08L** *23/34*
U.S. Cl. 273—235 R **4 Claims**

1. In a golf ball made up of a core and a thermoplastic cover said cover containing: (a) an ionic copolymer of (1) at least 50 mole percent (based on the alphaolefin-acid copolymer) of one or more olefins selected from the group consisting of ethylene and alphaolefins having up to 10 carbon atoms and of (2) from 0.2 to 25 mole percent (based on the alphaolefin-acid copolymer) of an alpha, beta ethylenically unsaturated mono- or dicarboxylic acid having from 3 to 8 carbon atoms, said copolymer containing in substantially uniform distribution a metal ion having a valence of 1 to 3 in monocarboxylic acid containing copolymers and a valence of 1 in dicarboxylic acid-containing copolymers; and (b) from about 5 to about 10 parts by weight of a filler per 100 parts by weight of said ionic copolymer, the improvement comprising the addition to the cover composition of from about 5 to about 20 parts by weight, per 100 parts by weight of said ionic copolymer, of a chlorosulfonated polyethylene containing from 25 to 35 percent chlorine and from 0.1 to 1.4 percent sulfur.

3,940,147

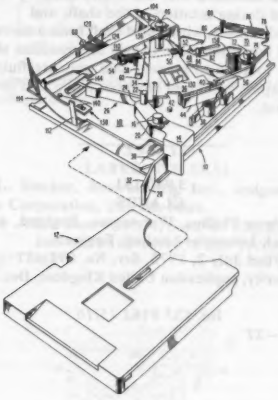
MODULAR DISC EJECT APPARATUS FOR USE AS AN OUTPUT HOPPER AND CARTRIDGE HOLDER IN DICTATION AND TRANSCRIPTION SYSTEMS

Ronald Eugene Hunt, Austin, and William Melchior Jenkins, Leander, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1975, Ser. No. 559,350

Int. Cl.² G11B *25/04, 1/02, 17/10*

U.S. Cl. 274—9 B **2 Claims**



1. Apparatus for holding a cartridge for receiving ejected discs therein for use in an associated transcription or dictation system comprising in combination:

a modular structure comprising a top support surface, and a bottom support surface having at least one wall integral thereto attached to said top support surface, thereby forming a front entry throat for said cartridge, and a side entry throat allowing said ejected discs to be received in said cartridge;

cartridge eject lever means pivotally connected to a main pivot post integral to said top support surface, a front surface of said cartridge cooperating with said cartridge eject lever means after entry into said modular structure, causing rotation thereof;

magnet support means pivotally connected to said main pivot post, said cartridge eject lever means cooperating with said magnetic support arm causing rotation thereof;

an eject interlock reed switch secured to said top support surface of said modular structure, said reed switch disposed so as to be closed by said rotation of said magnetic support means when said cartridge is latched into said modular structure, whereby an enabling sensing is provided to said associated transcription or dictation system;

disc counter means pivotally connected to said top support surface, said disc counter means being rotated by said ejected discs entering said cartridge; disc capacity indicator means pivotally connected to said main pivot post and operably connected to said disc counter means being rotated thereby, for providing a visual indication of the number of discs in said cartridge, and for cooperating with said magnetic support means causing rotation thereof, whereby said reed switch is opened when full disc capacity of said cartridge is obtained, thereby providing a disabling sensing to said associated transcription or dictation system inhibiting the ejection of said discs into said cartridge thereby preventing jamming of said apparatus; and

push to latch, push to unlatch means pivotally connected to said bottom support surface, said push to latch, push to unlatch means cooperating with a front bottom surface of said cartridge during entry thereof thereby latching said cartridge into position to receive said ejected discs, said push to latch, push to unlatch means and said cartridge eject lever cooperating with said cartridge during a subsequent push motion thereby unlatching and ejecting said cartridge.

3,940,148

LID INTERLOCK APPARATUS FOR A DISC RECORD PLAYER

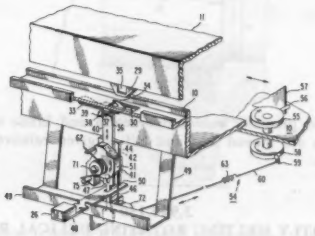
Leslie Albert Torrington, and Ronald Ray Oberle, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1975, Ser. No. 545,406

Claims priority, application United Kingdom, Nov. 18, 1974, 49927/74

Int. Cl.² G11B *1/00, 5/012;* **H04N** *1/00*

U.S. Cl. 274—1 R **9 Claims**



1. In a playback system for recovering prerecorded signals by a signal pickup from a disc record rotatably mounted on a turntable, the playback system including a lid pivoted on a base for movement between a closed position and an open position, and a signal pickup housing reciprocably mounted on the base for travel between a standby mode and a playback mode, a lid interlock apparatus comprising:

a lid release lever movably mounted on the base;

lid latch means selectively responsive to manipulation of the release lever for releasably securing the lid;

means conditionable between (1) a first condition decoupling, and (2) a second condition intercoupling, the release lever and the latch member; and

means interconnecting the conditionable means and the signal pickup housing, wherein the interconnecting means is effective for conditioning the conditionable means (a) into the first condition when the housing is in the playback mode whereat manipulation of the release lever is ineffective to release the lid, and (b) into the second condition when the housing is in the standby mode whereat the latch member responsive to manipulation of the lever releases the lid, if the lid were in the closed position.

3,940,149

TONEARM LINEAR-DRIVE APPARATUS

Fumitaka Nagamura, 1-6-14 Tomigaya, Shibuya, Tokyo, Japan

Filed Feb. 4, 1974, Ser. No. 439,575

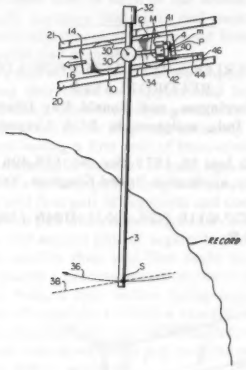
Claims priority, application Japan, Feb. 10, 1973, 48-016771

Int. Cl.² G11B *3/10*

U.S. Cl. 274—23 A **4 Claims**

3. The tonearm support apparatus of claim 1 wherein said first magnetic member is attached to said tonearm adjacent to said pivot point, said braking means is a brake shoe which engages and disengages from a stationary surface on said

carriage guiding support means and said carriage brake operating member is a pivoted member which moves said brake shoe into and out of engagement with said stationary surface



when said pivotally mounted tonearm and brake operating members are moved into and out of given relative angular positions.

3,940,150

PARTLY MELTING ROTATING HELICAL RING ASSEMBLY

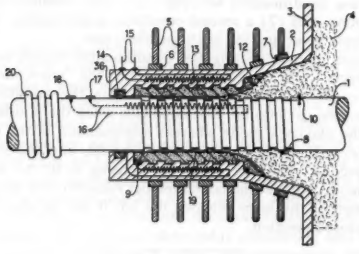
Jean Martin, Chatillon; Jean-Louis Ollier, Chilly Mazarin, and Paul Petit, Bagneux, all of France, assignors to Groupement pour les Activites Atomiques et Avancees "GAAA", Le Plessis Robinson, France

Filed Sept. 26, 1974, Ser. No. 509,603

Claims priority, application France, Oct. 1, 1973, 73.34998; Oct. 26, 1973, 73.38241; Nov. 12, 1973, 73.40130; Nov. 19, 1973, 73.41067

Int. Cl.² F16J *15/18, 15/40*

U.S. Cl. 277—22 **19 Claims**



1. A partly melting rotating helical seal assembly ensuring sealing with respect to fluids along a rotating shaft extending through a wall forming a chamber containing a fluid medium kept under pressure, said assembly comprising:

an outer metallic sleeve fixed relative to said wall, surrounding the rotating shaft and spaced radially therefrom a certain distance and having threads on its inner surface facing said shaft and having a radially inwardly extending flange at the end of said threads remote from said chamber, said flange terminating radially beyond said threads and forming seal means with said shaft relative to said fluid medium;

parallel threads having a depth of less than half a millimeter, cut in the shaft opposite the metallic sleeve;

cooling means for said metallic sleeve;

an intermediate sleeve arranged between the metallic sleeve and the threaded part of the shaft and being formed of a substance compatible with the fluid medium contained in the chamber, and cooled by said cooling means and frozen such that said intermediate sleeve is entirely solid and threaded to the outer sleeve and the intermediate sleeve when the shaft is motionless but capable of melting at its peripheral interface with the rotary shaft by the friction generated during rotation of the shaft; and

wherein said threads, within said shaft form a corresponding threaded liquid interface of said intermediate sleeve during shaft rotation to prevent said pressure fluid medium from escaping from said chamber along said shaft during its rotation.

3,940,151

GLANDS

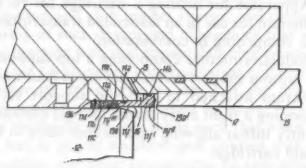
Reginald Andrew Phillips, Warrington, England, assignor to Dobson Park Industries Limited, England

Filed July 2, 1975, Ser. No. 592,457

Claims priority, application United Kingdom, Dec. 18, 1974, 54572/74

Int. Cl.² F16J *15/16*

U.S. Cl. 277—27 **10 Claims**



1. A gland seal arrangement for providing a fluid-tight seal between two relatively movable parts (**12, 17**), the said arrangement comprising an annular sealing member (**11***a*) for disposal between said parts (**12, 17**) in sealing contact therewith, the said member (**11***a*) being axially locatable in one said part (**12, 17**), and a thrust member (**11***f*) arranged to act axially upon the said sealing member (**11***a*), the said thrust member (**11***f*) having a face (**11***f'*) for exposure to the pressure of the fluid being sealed and being adapted, when subjected to such pressure, to urge the sealing member into such sealing contact.

3,940,152

PNEUMATIC SEAL

Jean Fournier, Chatou, France, assignor to Le Joint Francais, Paris, France

Filed Aug. 1, 1974, Ser. No. 493,947

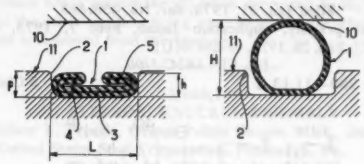
Claims priority, application France, Sept. 6, 1973, 73.32157

Int. Cl.² F16J *15/46*

U.S. Cl. 277—34 **8 Claims**

1. In an inflatable and deflatable pneumatic seal consisting of a profiled casing made of an elastic material, the improve-

ment wherein in the deflated condition, the casing comprises a flat base, a top collapsed on said base and at least one double

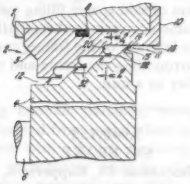


thickness lateral sidewall which is at least folded in and down on the collapsed top.

3,940,153
LABYRINTH SEAL

Harold L. Stocker, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1974, Ser. No. 530,836
Int. Cl.² F16J *15/48*; F02F *11/00*
U.S. Cl. 277—57 **4 Claims**



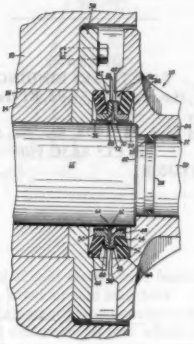
1. A labyrinth seal comprising two relatively rotatable annular proximate members and having an upstream end and a downstream end, the said members being configured to define between them a succession of annular orifices and to define between them a doubly recurved flow path from each orifice to the next downstream orifice, the said flow path being bounded by a barrier having a hemi-toroidal surface downstream of the orifice to reverse the flow the first time after passing the orifice, the flow path extending over the barrier downstream of the second reversal; and the barrier defining outlets through the barrier substantially tangent to the said hemi-toroidal surface discharging into the flow path downstream of the second reversal to increase turbulence in the flow.

3,940,154
END FACE SEAL ASSEMBLIES

Burton K. Olsson, Park Ridge, Ill., assignor to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed July 3, 1974, Ser. No. 485,363
Int. Cl.² F16J *15/34*
U.S. Cl. 277—92 **6 Claims**

1. An end face seal assembly for use in severe environments, said assembly comprising at least one generally annular, primary sealing ring having an axially facing, radially directed end face portion, at least a part of which is adapted to engage an oppositely directed mating part along a primary seal band area, an at least partially radially outwardly directed seat on said ring for receiving a portion of a secondary sealing member in driving engagement with said seat, an axially extending, radially inwardly directed annular inner ring surface, and a secondary sealing and driving member made entirely from an elastomeric material, said secondary member having at least a portion thereof adapted for snug secondary sealing engagement with said seat portion said beveled surface including a plurality of vanes disposed thereon said vanes being adapted to create turbulent flow of said lubricant whereby the distribution of said lubricant about the periphery of said seal ring will be facilitated, of said primary seal ring when an axial force is applied to said secondary sealing and driving member and when said member is at least partially confined against radially outward expansion, said secondary sealing and driving member being readily removable axially of said seat upon release

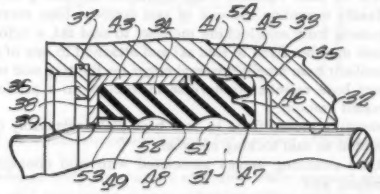


of said axial forces and said radial confinement, said primary sealing ring further including at least one beveled surface defining a reservoir for receiving and retaining seal face lubricant, said surface lying between and joining an edge of said annular inner ring surface and an inner margin of said end face portion, said beveled surface being inclined at a substantial angle with respect to said end face portion, whereby, in the use of said seal, sufficient lubricant will be retained in said reservoir adjacent said end face portion to insure lubrication of said seal band upon initial movement of said machine parts.

3,940,155
ELASTOMERIC SEAL

Rudolf F. Baumle, Mount Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 20, 1974, Ser. No. 507,827
Int. Cl.² F16J *15/18, 15/32*
U.S. Cl. 277—183 **5 Claims**



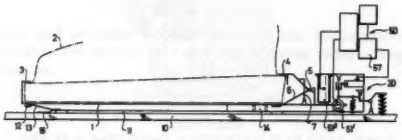
1. In combination, a seal and a rotatable shaft of predetermined diameter located within a housing, said seal comprising a ring of imperforate elastomeric material having a generally cylindrical inner surface engaging the shaft and a generally cylindrical outer surface frictionally engaging the interior surface of the housing, means in said housing limiting axial movement of said seal, said seal ring having one end abutting said movement limiting means and an opposite free end provided with a pair of concentric annular inner and outer lips separated by an annular generally V-shaped groove defining

the lips, said groove and lips being exposed to pressure in said housing causing inward and outward movement of said lips in a generally radial direction to engage said shaft and housing, respectively, axially spaced annular rings on the cylindrical inner surface engaging the shaft and separated by a pair of concave recesses, said annular rings and annular lips all having rounded surfaces in contact with said shaft and housing, and one end of said seal having a cut-away counterbore on the cylindrical inner surface adjacent said movement limiting means to prevent extrusion of said elastomeric material between said movement limiting means and said shaft.

3,940,156
SAFETY SKI BINDING

Hannes Marker, Hauptstrasse 51-53, 81 Garmisch-Partenkirchen, Germany

Filed Sept. 24, 1974, Ser. No. 508,761
Int. Cl.² A63C 9/08
U.S. Cl. 280—11.35 R **2 Claims**

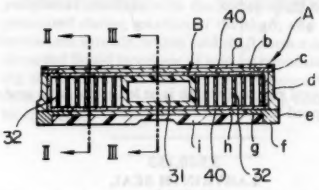


1. A safety ski binding for the automatic release of a ski boot from a ski in case of danger to the skier, comprising:
a ski having a surface;
a base plate releasably mounted on said ski;
a ski boot attaching means connected to said base plate for attaching a ski boot to said base plate;
a locking means mountd on said ski for releasably locking said base plate to said ski, said locking means including a resilient base member having lateral edges mountable on said ski to undergo transverse and vertical movements with respect to said ski surface in response to forces exerted on the skier's leg, a locking member fixed to one end of said resilient base member, mounting means fixedly mounting the end of said resilient base member remote from said locking member to said ski, a deformable member fixed to said ski and attached to one of said resilient base member lateral edges for limiting said resilient base member transverse movement to a predetermined amount;
connecting means fixed to said base plate releasably connected to said locking member;
a force evaluting means associated with said connecting means; and
an actuating means on said base plate cooperating with said force evaluating and connecting means for causing said connecting means to be released from said locking member when a dangerous amount of force is applied to the skier's leg; and
means for limiting said resilient base member vertical movement to a predetermined amount, said predetermined amounts of resilient base member vertical and transverse movement corresponding to forces exerted on the skier's leg which are less than said dangerous amount of force required to cause said connecting means to be released from said locking member.

3,940,157
SKI STRUCTURE

Kenichi Sakuma, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 31, 1974, Ser. No. 438,463
Claims priority, application Japan, Feb. 7, 1973, 48-16530[U]; Feb. 28, 1973, 48-25470[U]
Int. Cl.² A63C 5/00
U.S. Cl. 280—11.13 L **5 Claims**

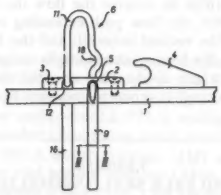


1. A ski structure comprising separate upper and bottom members defining a space therebetween which extends substantially the length of said ski; a single elastic, box-like inner core frame located within said space and extending longitudinally of the ski, said frame being dimensioned in width to occupy only a portion of said space; filling means on opposite sides of said core frame occupying substantially the remaining portion of said space laterally of the frame; and binding means within said space surrounding the frame and the filling means to hold same together as a unit.

3,940,158
SKI BRAKE

Hans Wehrli, Zurcherstrasse 81, Rapperswil, Switzerland

Continuation-in-part of Ser. No. 460,532, April 12, 1974, Pat. No. 3,884,487. This application Apr. 24, 1975, Ser. No. 571,109
Claims priority, application Switzerland, Feb. 18, 1975, 1969/75; Apr. 13, 1973, 5387/73
Int. Cl.² A63C 7/10
U.S. Cl. 280—11.13 B **7 Claims**



1. In a ski brake securable to the upper surface of a ski and having, laterally of the ski, first and second brake spurs which are pivotable about first and second pivot axes, respectively, extending on the upper side of the ski transversely with respect to the longitudinal axis thereof and a holding lever depressible by the ski boot to hold said brake spurs in a rest position, said brake spurs being pivoted into their braking positions by spring action upon removal of a ski boot from the ski binding, the improvement in the brake comprising a wire bent so that one end portion forms a first one of said brake spurs, the other end portion forms the second one of said brake spurs, a first central shaft portion lies in the first one of said pivot axes, a second central portion is shaped into a holding loop forming said holding lever, and a third central

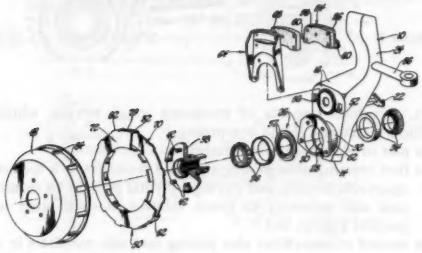
shaft portion lies in the second one of said pivot axes, said first and second axes being paarallel and longitudinally spaced apart, said holding loop acting as a spring which moves said spurs to their braking positions and having two positions, one position being against the ski when depressed by the ski boot and the other position being away from the ski when the ski boot is removed from the binding.

3,940,159

STEERING KNUCKLE ASSEMBLY

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 31, 1974, Ser. No. 519,522
Int. Cl.² B62D *7/18*
U.S. Cl. 280—96.1 **32 Claims**



1. A steering knuckle assembly comprising: an integral metal housing formed from metal plate, said housing having a top and a bottom with a front extending therebetween, said housing having an actuator opening extending through said front for receiving an actuator assembly, said housing including integral flanges extending rearwardly from and completely about the periphery of said front to define side flanges and top and bottom flanges, said housing being symmetrical on either side of a center line passing from top to bottom thereof, brake shoe supporting means disposed on said front of said housing on either side of said actuator opening for supporting a brake shoe extending over said actuator opening, arm support means extending through said side flanges for receiving a steering arm from either side thereof and wheel supporting means spaced from said actuator opening.

3,940,160

INDEPENDENT WHEEL SUSPENSION FOR MOTOR VEHICLES

James J. Damon, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1974, Ser. No. 535,541
Int. Cl.² B60G *11/58*
U.S. Cl. 280—96.2 R **5 Claims**

1. An independent wheel suspension for a motor vehicle comprising vehicle body structure, a steerable wheel support member and suspension means interconnecting said body structure and said wheel support member;

said suspension means including a suspension arm member having its inner end pivotally connected to said body structure;

resilient pivot means connecting the outer end of said arm member to said wheel support member;

said resilient pivot means comprising an elastomeric bushing and a ball and socket joint;

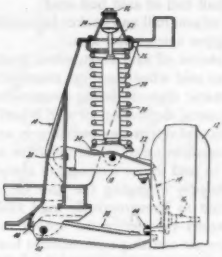
said elastomeric bushing including an inner rigid sleeve, an intermediate annular elastomeric element and an outer rigid sleeve;

said rigid sleeves and said elastomeric element having coaxial axes arranged generally vertical;

said ball and socket joint having a ball stud with a shank portion positioned in and secured to said inner rigid sleeve;

said ball and socket joint also having a socket positioned about a ball end of said ball stud;

said socket of said ball and socket joint being rigidly secured to one of said members;



said outer sleeve of said elastomeric bushing being rigidly secured to the other of said members;

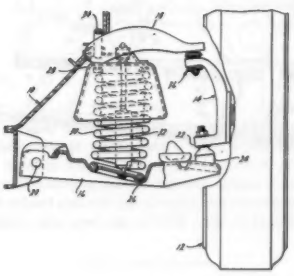
said elastomeric element being constructed to permit resilient horizontal deflection of said wheel support member relative to said arm member.

3,940,161

INDEPENDENT WHEEL SUSPENSION FOR A MOTOR VEHICLE

William D. Allison, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1974, Ser. No. 535,540
Int. Cl.² B60G *3/20*
U.S. Cl. 280—96.2 R **1 Claim**



1. A wheel suspension system for a motor vehicle comprising:

vehicle body structure, a steerable wheel support member and suspension means interconnecting said body structure and said wheel support member;

said suspension means including upper and lower suspension arms pivotally connected to said body structure;

pivot means connecting said lower arm to said wheel support member;

a suspension spring interposed between said lower arm and said body structure;

resilient pivot means connecting the outer end of said upper arm to said wheel support member;

said resilient pivot means comprising an elastomeric bushing and a ball and socket joint;

said elastomeric bushing including an inner rigid sleeve, an intermediate annular elastomeric element and an outer rigid sleeve;

said rigid sleeves and said elastomeric element having coaxial axes arranged generally vertical;

said ball and socket joint having a ball stud with a shank portion positioned in and secured to said inner rigid sleeve;

said ball and socket joint also having a socket positioned about a ball end of said ball stud;

said socket of said ball and socket joint being rigidly secured to said upper suspension arm;

said outer sleeve of said elastomeric bushing being rigidly secured to said wheel support member;

said elastomeric element being constructed to permit resilient horizontal deflection of said wheel support member relative to said upper suspension arm and thereby attenuate the transmission of vibrations from said wheel support member to said upper suspension arm;

a nut threadedly engaging the end of said ball stud and constructed to compressively load said elastomeric element thereby increasing the spring rate of said elastomeric element resisting said resilient horizontal deflection of said wheel support member relative to said upper suspension arm;

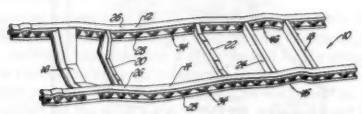
said inner sleeve surrounding said shank constructed to limit the compressive loading of said elastomeric element and thereby limit the spring rate of said elastomeric element.

3,940,162

STRUCTURAL MEMBER

Gerald R. Winslow, Royal Oak, and Jack J. Ritchie, Washington Township, both of Mich., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 13, 1974, Ser. No. 532,403
Int. Cl.² B62D *21/00*
U.S. Cl. 280—106 R **13 Claims**



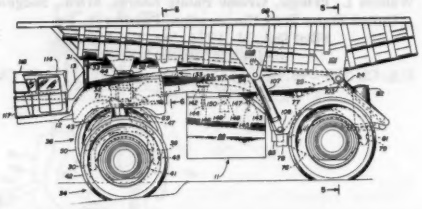
1. A vehicle frame assembly comprising: first and second parallel and spaced-apart structural members and a plurality of cross members connecting said structural members; each of said structural members including an upper plate member, a lower plate member, said upper and lower plate members being spaced apart a distance equal to variable X, and a reinforcing web comprising a plurality of web segments extending back and forth between said plate members in zigzag fashion, said web segments meeting said plate members at a web angle equal to variable θ; said structural member including a region having a higher load requirement wherein the distance between the points of intersection of adjacent web segments with said plate members is shorter for both of said upper and lower plate members than in regions having lesser load requirements, the distance between said points of intersection being reduced by varying at least one of said variables.

3,940,163

VEHICLE FOR TRAVERSING ROUGH TERRAIN

Leo W. Davis; Marion D. Lackey; John Reuben Ross, and Bryant Trenary, all of Dallas, Tex., assignors to Marion Power Shovel Company, Inc., Marion, Ohio

Continuation of Ser. No. 395,535, Sept. 10, 1973, abandoned, which is a continuation of Ser. No. 67,901, Aug. 28, 1970, abandoned. This application Aug. 12, 1974, Ser. No. 496,720
Int. Cl.² B62D *21/00*
U.S. Cl. 280—106 R **18 Claims**



1. A vehicle capable of traversing rough terrain, which vehicle includes a frame comprising:

a pair of elongated side members;

a first crossmember joining said side members in a spaced apart relationship and having a pivotal portion to permit said side members to rotate relative to each other in parallel planes; and

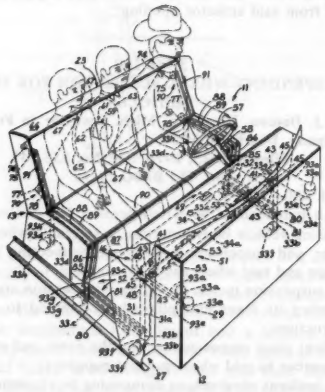
a second crossmember also joining said side members in a spaced apart relationship, each end of said second crossmember being pivotally connected to one of said side members to permit limited rotation of said side member while providing lateral restraint on the side member, and said second crossmember being unattached to structure which would limit its vertical and horizontal displacement during rotation of said side members as said vehicle traverses rough terrain.

3,940,164

PASSIVE RESTRAINT SAFETY BELT SYSTEM

Tse Quong Non, 2315 S. Wentworth Ave., Chicago, Ill. 60616

Filed Oct. 16, 1974, Ser. No. 515,304
Int. Cl.² B60R *21/02*
U.S. Cl. 280—150 SB **11 Claims**



1. A safety belt system for a vehicle comprising at least one belt movable from a stowage position to a restraint position at a vehicle occupant's chest to restrain the occupant's upper body, means to shift said belt from the stowage position to the restraining position, means on said belt allowing the same to

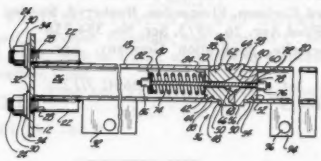
turn and to move upwardly along the occupant's body toward the occupant's chest, recess means associated with the backrest portion of the vehicle seat for receiving a portion of the belt as the belt comes to the occupant's chest, power operated means for returning said belt from said restraining position after restraining the occupant to the stowage position, an electrical control means operable with a deceleration or acceleration of said vehicle of at least one predetermined magnitude to operate said shifting means to shift said belt automatically from said stowage position to said restraint position, and means to guide said belt to a position about the occupant's chest.

3,940,165

HANGER FOR VEHICLE MUD FLAPS

Nash P. Sogoian, 1417 21st St., Detroit, Mich. 48216

Filed Apr. 18, 1974, Ser. No. 461,870
Int. Cl.² B62B 9/16
U.S. Cl. 280—154.5 R **2 Claims**



1. A hanger for a vehicular mud flap comprising an elongated tubular first support member, means carried at one end of said first support member for mounting said first support member to a vehicle, an elongated tubular second support member carried at the free end of said support member and in axial alignment therewith, means carried longitudinally on said first and second support members for securing a mud flap thereto, a helical spring in a state of compression disposed within one of said support members and having one end attached to the free end of said helical spring and having the other end of said cable attached to the other of said support members, a first mating member disposed at the free end of said first support member, and a second mating member disposed in the attached end of said second support member adjacent said first mating member, wherein one of said mating members includes an annular ridge adapted to register with a cooperating annular recess formed on the other of said mating members, wherein the means carried at one end of said first support member for mounting said first support member to said vehicle frame comprises a pair of studs welded to the outer periphery of said first support member substantially parallel with the longitudinal axis of said first support member and substantially diametrically opposed to each other so that the threaded portions of said studs extend beyond the end of said first support member, said frame being provided with a pair of apertures adapted to receive said stud threaded portions therethrough and locking means adapted to engage said stud threaded portions after extension of said stud threaded portion through said apertures.

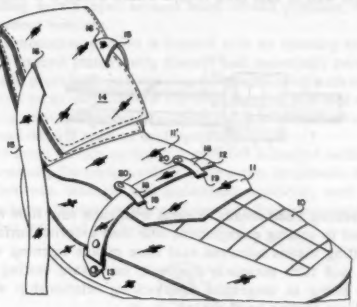
3,940,166

AUXILIARY RETENTION BELT AND SUPPORT CUSHION FOR SEAT OF OPEN VEHICLES

Clarence O. Smithea, Suite 302, 1911 Jefferson Davis Highway, Arlington, Va. 22202

Filed Sept. 10, 1974, Ser. No. 504,744
Int. Cl.² B60R 21/10
U.S. Cl. 280—290 **5 Claims**

1. An occupant retention device for an open vehicle having a plural occupant, straddle seat, said device comprising a cushion retained in a substantially upright position adjacent the back of a passenger on said seat; an extension sheet integrally connected to said cushion and lying horizontally on said seat; a transverse strap extending across said seat and over



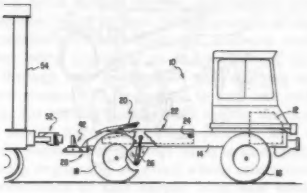
said extension sheet for releasably securing said device to said vehicle; and a belt secured to said cushion for extending around both said passenger and the operator of said vehicle.

3,940,167

CONVERTIBLE TRAILER/RAIL CAR TRACTION UNIT

Gilbert B. Pilz, Toledo, Ohio, assignor to Young Ottawa, Inc., Bowling Green, Ohio

Filed Jan. 30, 1975, Ser. No. 545,390
Int. Cl.² B60D 1/00
U.S. Cl. 280—456 R **5 Claims**



1. A convertible trailer/rail car traction unit, comprising; a self propelled vehicle supporting a fifth wheel and rail car coupler in tandem for conjoint movement with said vehicle along a path of coupling movement; and means mounting one of said fifth wheel and rail car coupler for movement relative to said vehicle into and out of said path of coupling movement.

3,940,168

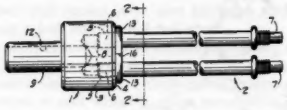
TUBE AND FITTING STRUCTURE

Albert J. Balon, 9717 Greenhaven Parkway, Brecksville, Ohio 44131

Continuation-in-part of Ser. No. 378,318, July 11, 1973. This application Nov. 14, 1973, Ser. No. 415,551
Int. Cl.² F16L 39/00
U.S. Cl. 285—132 **8 Claims**

1. A tube and fitting assembly comprising fitting means having a plurality of bore means therein each having an internal wall and an opening with a periphery, said fitting means also having an external surface surrounding each said bore means opening, and a plurality of elongated tube means each having an end and an external wall adjacent thereto, each said tube end and a portion of said associated tube means adjacent thereto being disposed in a said bore means, means co-acting between said fitting means and tube means within each said

bore means limiting the inward, axial displacement of a part of said tube means nearer said end than the portion of said tube means most remote from said end and within said bore means, each said tube means having a sealing engagement with said wall of said bore means within which it is disposed,



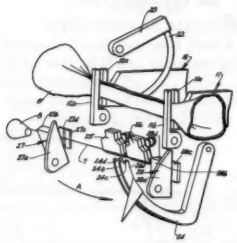
and a sealing bead means integral with each said tube means wall and in sealing engagement with said external surface of said fitting means adjacent said bore means opening within which said tube means is disposed, each said sealing bead means being in tangential interlocking relationship with a contiguous sealing bead means.

3,940,169

LOOP KNOT TYING METHOD AND APPARATUS

Ronald W. Kock, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 22, 1974, Ser. No. 517,110
Int. Cl.² B65H 69/04
U.S. Cl. 289—1.5 44 Claims



1. Apparatus for forming a simple loop knot of segment of flexible strand-like material about a portion at least of a product, said apparatus comprising a head, means on said head for clamping and holding said product in a position to receive said loop knot, means on said head for forming said strand segment into a U-shaped loop behind said product, said U-shaped loop having a pair of legs joined by a base portion, means on said head for frictionally engaging the free ends of said loop legs, means on said head for engaging the base portion of said strand loop and carrying said base portion of said loop forwardly of said product and about said portion at least thereof and means on said head for removing said free ends of said loop legs from said frictional engagement means and drawing said free ends through said base portion of said strand loop to form said simple loop knot.

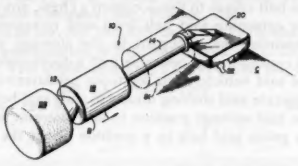
3,940,170

HAND PINNER AND KNEE KICKER

William H. Williams, Rte. 2, Box 299-W, Monroe, La. 71201

Filed June 28, 1974, Ser. No. 484,113
Int. Cl.² A47G 27/04
U.S. Cl. 294—8.6 1 Claim

1. The combination with a knee kicker having a shank, a carpet-engaging head with depending prongs, and a padded head engageable by the knee to stretch the carpet; of a peripheral shoulder formed on said shank adjacent to said carpet engaging head and defining a stop; and a weight slidably mounted on said shank and forcefully moveable by hand from



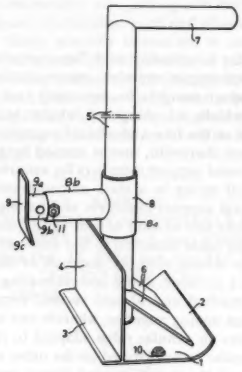
the padded head to and against said stop to impart a sharp tug to said carpet by said carpet engaging-head.

3,940,171

LIFTING DEVICE, PARTICULARLY FOR LIFTING AND TRANSPORTING BUILDING BOARDS, SUCH AS PLASTER AND WOOD PARTICLE BOARDS

Bertil Sigvard Carlsson, Elvegarden, Bankeryd, Sweden

Filed Apr. 26, 1973, Ser. No. 354,758
Claims priority, application Germany, Apr. 27, 1972, 161387U]
Int. Cl.² B66F 15/00; B65G 7/12
U.S. Cl. 294—15 7 Claims



1. A lifting device for lifting and transporting a building board such as a plaster or wood particle board or the like, comprising:

a bearing support comprising a bottom plate having a forward portion for supporting said board in use and a rearwardly extending curved portion curved upwardly for pivoting said bottom plate thereabout to lift said board while supported in use on said forward portion;

a column connected to said bearing support and extending upwardly therefrom for effecting pivoting of said bottom plate about said curved portion by rearwardly displacing of said column from an upstanding position in a direction toward said curved portion;

a pressure plate freely mounted for rotation about said column and freely slidable axially along said column and positionable in use at a rearward position to clear said board while supported in use on said forward portion and rotatable to a forward position for bearing against a major surface of said board in use on said forward portion while said board is positioned against a generally vertical work surface on which said board is to be disposed; and

a tubular tee comprising a sleeve portion, and a stem fixed to said pressure plate and projecting from said sleeve

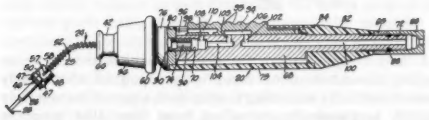
portion, said sleeve portion having an axial bore extending therethrough mounted with said column extending through said axial bore for free rotation about said column and freely slidable axially along said column, said pressure plate and said tubular tee being gravity biased to slide downwardly along said column to maintain said pressure plate bearing against said board in use while said board is supported on said forward portion and while said board is positioned against said generally vertical work surface, and to bear on said board and progressively slide downwardly along said column as said column is progressively rearwardly displaced to effect pivoting of said bottom plate and lifting of said board while maintaining said pressure plate bearing against said board and thereby to maintain said board positioned against said generally vertical work surface during the lifting of said board, whereby said board is maintained in a lifted position while supported on said forward portion and positioned against said work surface and bearing downwardly on said forward portion upon release of said column.

3,940,172

VACUUM-ACTUATED PICK-UP INSTRUMENT

Clifford L. Hutson, Glendale, and Leonidas C. Miller, Monterey Park, both of Calif., assignors to Clifford L. Hutson, Glendale, Calif.

Filed Apr. 22, 1974, Ser. No. 462,591
Int. Cl.² B25J *7/00*
U.S. Cl. 294—64 R **13 Claims**



2. In a vacuum-actuated pick-up instrument for handling small objects, the combination of:

an elongated body forming an inner air passage for communication with a controlled vacuum source;

an air tube to pick up objects by vacuum action;

cooperative means on an inner end of the air tube and on a forward end of the body, respectively, releasably connecting the inner end of the air tube with said air passage in the body;

a hub member surrounding the air tube forwardly of said cooperative means; and

annular means on the forward end of the body surrounding said cooperative means and extending forward therefrom,

said annular means forming a socket forwardly of said cooperative means to embrace the hub member and to cooperate with said cooperative means to stabilize the rigid air tube, said annular means being slidable forwardly against the hub member to cause disconnection of said cooperative means.

3,940,173

SAFETY HOOK

Otmar M. Ulbing, Webster, N.Y., assignor to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed Feb. 10, 1975, Ser. No. 548,627
Int. Cl.² B66C *1/36*
U.S. Cl. 294—82 R **4 Claims**

1. In a safety hook including a hook body portion having a mounting portion, a load bearing portion and a hook gripping portion connecting said mounting and load bearing portions, said mounting portion being formed with a slot to define a pair of spaced ears, said ears having a pair of axially aligned openings; a pivot pin extending transversely between said ears and being end supported within said aligned openings; a keeper having a pointed end portion, said keeper being mounted by said pivot pin intermediate said ears for movements about a pivot axis between hook closed and open positions, wherein said pointed end portion is disposed in and removed from engagement with said load bearing portion, respectively; and a latch device carried by said hook body portion for releasably retaining said keeper in said hook closed position, the improvement wherein:

said mounting portion is formed with an opening arranged to extend transversely thereof and essentially parallel to said pivot axis, said opening communicating with said slot at a point intermediate the ends thereof, and said mounting portion having an abutment partially blocking one end of said ends of said opening;

said latch device includes a member mounted within said opening for reciprocating movements lengthwise thereof between latched and unlatched positions, and spring means arranged within said opening for biasing said member into said latched position; and

said keeper is formed with a rib arranged intermediate said ears, said rib having opposite side surfaces and an edge surface arranged to face said opening, said edge surface having a notch formed therein, said latched position of said member being defined by engagement of one end of said member with said abutment, said one end of said member being accessible to an operator of said safety hook through said one end of said opening to permit operator pressure to be applied to said one end of said member for moving said member against the bias of said spring means from said latched position into said unlatched position, said member when in said latched position being engageably received within said notch to prevent movement of said keeper from said hook closed position and when in said unlatched position being removed from within said notch to permit movements of said keeper between said hook closed and open positions.

3,940,174

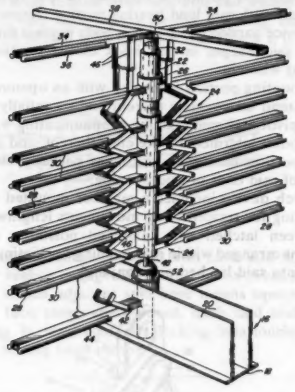
POULTRY TRAILER

Frank E. Mayes, Rte. No. 1, Farmington, Ark. 72730

Filed Jan. 31, 1974, Ser. No. 438,444
Int. Cl.² B60P *3/00*
U.S. Cl. 296—3 **7 Claims**

1. A poultry storage rack comprising a base, a plurality of elongated upright vertically extending supports supported at their lower end portions from said base at points spaced therealong, said supports each including means at least partially enclosing a passage defined thereby extending longitudinally thereof and having a series of horizontally extending support units for the support of a poultry basket therefrom mounted on the exterior thereof and spaced one above the other for vertical adjustment therealong, each support unit consisting of at least one support arm cantilevered outward from its support, lost motion connecting means connecting each support unit to the support unit therebelow for upward displacement of the lower unit with the unit thereabove in response to elevation of the upper unit a predetermined distance above the lower unit and allowing downward displacement of the upper unit relative to the unit therebelow below a level spaced said predetermined distance above the lower unit; elevating

means extending along each of said passages and connected between the corresponding upright support and the associated



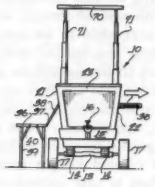
upper support unit for raising and lowering the latter relative to said support said elevating means being operable in unison.

3,940,175

MULTI-PURPOSE COMBINATION TRAILER AND PICNIC TABLE

Jimmy R. Robison, Rte. 8, Box 541, Tulsa, Okla. 74106

Filed Sept. 9, 1974, Ser. No. 504,452
Int. Cl.² B60P *3/02*
U.S. Cl. 296—22 7 Claims



1. A multi-purpose combination trailer and picnic table intended for towing behind automobiles comprising:

a horizontally disposed frame having longitudinally extending side frame members and transversely extending cross frame members;

an axle extending transversely of the frame and having a wheel rotatably supported on each end thereof;

a tongue associated with the front end portion of the frame and projecting outwardly therefrom adapted to be connected to the towing automobile;

a horizontal bottom surface supported by the frame;

a pair of transversely spaced apart longitudinally extending vertically disposed side wall members;

a pair of longitudinally spaced apart transversely extending vertically disposed front and back end wall members interconnecting the side wall members at opposite ends thereof;

a compartment defined by the wall members and bottom floor member and opening out of the top of the trailer;

a flat rectangularly shaped cover member closing the top of the compartment and movable relative thereto between a position providing access to the compartment and a position completely closing the compartment;

a pair of flat elongated rectangularly shaped bench members, each member of a length less than the length of an associated sidewall slot and associated with the slot to be slid therethrough between a protected enclosed storage position within the trailer compartment and an operable position disposed exteriorly of the trailer in a position in the proximity of the cover member whereby the upper surface of the cover member may be utilized as a table top by a person disposed on said bench members;

means for guiding the movement of the benches between the exterior use and the interior storage position; and

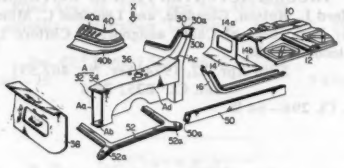
a canopy telescopically supported relative to the cover member to be elevated thereabove to provide a shade and weather protective element therefor.

3,940,176

VEHICLE BODY CONSTRUCTION

Hiroshi Ito, and Seikichi Yoshitsugu, both of Tokyo, Japan, assignors to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed June 10, 1974, Ser. No. 478,042
Claims priority, application Japan, June 12, 1973, 48-69997; June 21, 1973, 48-73674; June 26, 1973, 48-75606
Int. Cl.² B62D *27/00*
U.S. Cl. 296—28 F 3 Claims



1. In a body structure for a motor vehicle driven by an engine, the combination comprising a pair of transversely spaced, vertically extending front pillers; a pair of transversely spaced, longitudinally extending front floor side members secured to said front pillers and extending rearwardly therefrom; a front floor member mounted between said front floor side members and forming a part of a passenger cabin; a dashboard panel separating the passenger cabin from an engine room; a cross member transversely extending between and connected to said front floor side members and to said front floor member; a pair of transversely spaced, longitudinally extending dash side members, said dash side members being secured to said dashboard panel at front portions of said dash side members and also secured to said front floor member at rear portions of said dash side members, said dash side members extending longitudinally to positions to cross said cross member such that impact shocks transmitted to the dash side members are transmitted through the floor panel to the cross member; a pair of transversely spaced, longitudinally extending reinforcing members connected at their rearward portions to said front pillers; a sub-frame provided in front of said dashboard panel to support the engine thereon, said sub-frame being connected at its front portion to said reinforcing member and at its rearward portion to said dash side members so that impact shocks are delivered simultaneously to the dash side members and the front pillars.

3,940,177

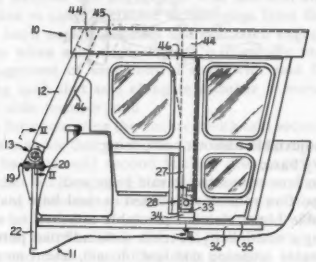
VIBRATION-ISOLATED CAB FOR TRACTORS

Bruce W. Miers, Peoria Heights; Arthur E. Olt, Jr., Pekin; Richard Van Rossem, Canton, and John D. Wait, Jr., Dunlap, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 8, 1974, Ser. No. 495,590
Int. Cl.² B62D *23/00*
U.S. Cl. 296—35 R 3 Claims

1. An earthworking vehicle disposed for movement along a longitudinal axis thereof comprising a frame, an operator's protective cab disposed on said frame, and mounting means mounting said cab on said frame, said mounting means com-

prising a pair of laterally spaced first posts inter-connected between a back side of said cab and said frame, first vibration damping means comprising a resilient bushing assembly mounted in a transverse bore formed through a lower end of each of said posts, said bushing assembly including a cylindrical bearing bushing rotatably mounted on the shank of a bolt means releasably attached between a pair of upstanding support legs secured to said frame, an annular elastomeric bushing mounted on said bearing and a cylindrical sleeve mounted on said elastomeric bushing and in said bore, the bearing bushing having an axial length substantially equal to the lateral distance between inner surface portions of said support legs



and being clamped axially therebetween by said bolt means, a pair of laterally spaced second posts disposed forwardly on said vehicle relative to said first posts, the lower ends of said second posts being tubular and telescopically mounted on upstanding support members releasably secured to said frame, second vibration damping means comprising the said first resilient bushing assembly mounted in a transverse bore through said upstanding support member, said bolt means securing the tubular posts to the support members whereby said posts are isolated from vibrations in said frame during operation of said vehicle and by completely releasing said upstanding support member and partially releasing said first bolt means, said frame and cab may be pivoted backwards.

3,940,178

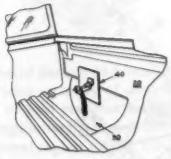
SPARE TIRE MOUNTING

Edward L. Leveque, Rte. 1, M-55, Wellston, Mich. 49689

Filed Jan. 18, 1974, Ser. No. 434,371

Int. Cl.[2] B62D *43/08*

U.S. Cl. 296—37.2 **11 Claims**



1. Apparatus for mounting a spare wheel and tire in a vehicle such as a pick-up truck comprising a cab, a rear window in said cab, a cargo box having a floor, and side walls which extend above said floor rearwardly of said cab to a level no higher than the bottom of said rear window, the height of said side walls above said floor generally being less than the diameter of one of the wheels and tires used to movably support said vehicle, a wheel housing along and immediately adjacent each side of said side walls for covering a wheel and tire when mounted for support of the vehicle, said housings each having a height no greater than said side walls and a predetermined width extending out from the side wall along which it is located, the distance between said wheel housings permitting insertion of cargo along said cargo box floor between said housings and said height of said housings permitting cargo to extend over said housings along the top edges of said side walls; means for mounting a spare wheel and tire generally parallel to and adjacent one of said side walls behind said cab and accessible from the interior of the cargo box such that no portion of the spare wheel and tire extends above the top of said one side wall; the spare wheel and tire being of the type including a central support having a tire-receiving rim extending about the periphery thereof and laterally of either side thereof, the central support including a vehicle axle-receiving aperture located centrally therein and a plurality of apertures for securing the wheel and tire to the axle spaced about the axle-receiving aperture; said mounting means including a well recessed a predetermined distance below said floor adjacent said one side wall for receiving the spare wheel and tire, and securing means for securing the spare wheel and tire within said well including means for engaging the side surface of the central support adjacent said one side wall when the spare wheel and tire is received in said well; said engaging means including a rigid member, a plate secured on one end of said rigid member, at least one stud extending outwardly from said plate, and hinge means for securing the end of said rigid member opposite said one end to said one side wall adjacent said well; said plate adapted to abut the said side surface of the central support adjacent said axle-receiving aperture while said stud projects through one of the securing apertures for securing the central support to said plate; said hinge means allowing pivotal movement of said engaging means between an operative position for engaging and securing the spare wheel and tire and an inoperative position for insertion of the spare wheel and tire in said well, said width of said wheel well being sufficiently wider than the width of the spare wheel and tire received therein to allow said wheel and tire to be tilted and slid past said securing means when they are pivoted, said well width being no greater than said predetermined width of said wheel housing along said one wall whereby when no cargo is loaded in said cargo box, a driver of said vehicle has unimpeded visibility over said side wall in the area of said mounting means when the spare wheel and tire are secured therein, said mounting means permitting the loading of any cargo in said cargo box such as a camper or the like which would otherwise fit between and over said wheel housings.

3,940,179

FLATBED SIDE PANEL STAKE

Thomas McBride, Owensboro, Ky., assignor to ECK Miller Transportation Corporation, Owensboro, Ky.

Filed June 5, 1974, Ser. No. 476,390

Int. Cl.[2] B60P *7/06*

U.S. Cl. 296—43 **3 Claims**

1. A stake configuration for use with a trailer flatbed to support side panels comprising:

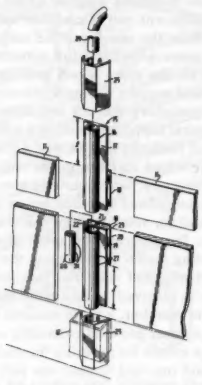
a tubular member,

a plate member tangentially integral and coextensive along one of its faces with the tubular member along the longitudinal dimension,

a T-shaped member, the leg thereof being integral with the plate member along the other face of the latter to form grooves to receive the side panels, the longitudinal dimension of the T-shaped member being less than the longitudinal dimension of the tubular and plate members, opposite ends of the T-shaped member in the longitudinal dimension being spaced at equal distances from opposite ends of the coextensive tubular and plate members in the longitudinal dimension located nearest thereto, such that either end of the stake configuration may be received by the flatbed,

means mounted within the tubular member and positioned closer to one end of the tubular member relative to the other end to vary the height at which the transverse por-

tion of tarpaulin bowed rods are received within the tubular member and stopped and supported from the



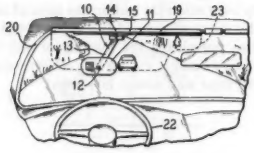
flatbed, depending on which end of the stake configuration is received by the flatbed.

3,940,180

GLARE ELIMINATING DEVICE

Louis T. Altschul, 1325 E. Lake Ave., Glenview, Ill. 60025

Filed Aug. 19, 1974, Ser. No. 498,640
Int. Cl.² B60J 3/02
U.S. Cl. 296—97 D **5 Claims**



1. A glare eliminating device for use on vehicles, comprising:
   - a flat support arm having an upper and lower end,
   - a flat shielding portion of an opaque material pivotally attached centrally to said lower end of said support arm,
   - an L-shaped mounting bracket comprised of a bottom surface and an upright rib, pivot means attaching said rib to said upper end of said support arm providing for pivotal movement in the plane of said rib,
   - a surface of pressure sensitive releasably-engaging means affixed to said bottom surface of said L-shaped mounting bracket,
   - and a cooperating surface of pressure sensitive releasably-engaging means affixed to an area forwardly and above the steering wheel of an automobile,

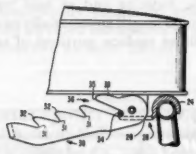
whereby said glare eliminating device can be horizontally positioned by selectively bringing the cooperating surface of pressure sensitive releasably-engaging means of said L-shaped mounting bracket in contact with a selected point on said surface of pressure sensitive releasably-engaging means, and can be vertically adjusted by radial movement of said support arm to position the shielding portion in any selected area in front of the driver, thereby obscuring objectionable sunlight or headlights of on-coming cars while driving at night.

3,940,181

ADJUSTABLE HASSOCK

Thomas M. Cheek, Jr., Richmond, Va., assignor to Dart Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 361,824, May 18, 1973, abandoned.
This application Oct. 24, 1974, Ser. No. 517,727
Int. Cl.² A47C 9/12
U.S. Cl. 297—439 **8 Claims**



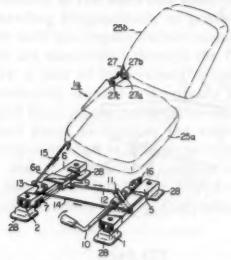
1. An adjustable hassock comprising:
   - a unitary base;
   - detent means connected to said base; and,
   - a seat portion rotatably mounted on said base including a movable brace element pivotably attached to said seat having a multiplicity of teeth with indented portions for releasably retaining said seat on said detent means, said element having an inner edge which generally faces said seat and an elongated open ended slot disposed at an end thereof adjacent said seat for slidably guiding said element on said detent means to a position beneath said seat when said seat is placed in a closed position; said slot extending angularly from an open end at said edge a distance substantially greater than the indented portions toward a closed end at a location adjacent where said brace element is pivotably attached.

3,940,182

SEAT POSITION CONTROL MECHANISM HAVING A POSITION MEMORY ELEMENT

Takeo Tamura, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 29, 1974, Ser. No. 501,781
Claims priority, application Japan, Aug. 31, 1973, 48-98535
Int. Cl.² A47C 1/02
U.S. Cl. 297—341 **2 Claims**



1. A seat position control mechanism for a vehicle seat assembly having a substantially horizontal seat and a normally upright backrest pivotable relative to the seat for forward tilting movement, the control mechanism comprising:
   - stationary guides having a plurality of spaced latch engaging means and fixedly attached to the vehicle floor under the seat;
   - slide members slidable on said stationary guides and attached to the seat;

an elongate member disposed parallel with one of said stationary guides and an associated slide member and having first and second latch engaging apertures therein, each being arranged in registry with one of said latch engaging means of said stationary guide;

a first spring-loaded latch on said elongate member and normally engaged with said first aperture and one of said latch engaging means of said stationary guide;

a second spring-loaded latch on said slide member and normally engaged with said second aperture of said elongate member and another latch engaging means of said stationary guide;

a manual control shaft axially rotatably supported by the slide member and engageable with said first and second latches to cause the same to disengage from the respective latch engaging means and said latch engaging apertures when said control shaft is manually turned, the engagement of said control shaft with said first latch being such that said elongate member is movable with said slide member; and

means for connecting the backrest with said second latch in such manner that upon the forward tilting movement of the backrest said second latch is disengaged from said another latch engaging means and said second aperture to thereby allow said slide member to be moved forward and then backward to the position determined by the engagement of said first latch with said first latch engaging aperture and said one of the latch engaging means of said stationary guide, and at this position said second latch is engaged in said second aperature and said another latch engaging means.

3,940,183

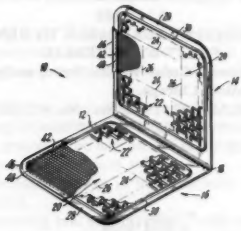
BODY SUPPORT PANEL AND MAT MADE THEREFROM

Samuel M. Seltzer, 85 Athens Road, Short Hills, Millburn, N.J. 07078, and Saul Dennison, 7 Wedgewood Drive, West Orange, N.J. 07052

Filed Dec. 4, 1974, Ser. No. 529,337

Int. Cl.² A47C *7/02*

U.S. Cl. 297—453 **13 Claims**



1. A support panel for use as a ventilated body support mat, the panel comprising an array of sections arranged in columns and rows, each of said sections including a transverse head portion and a longitudianl stem portion projecting perpendicularly from a central region of said transverse head portion to define T-shaped elements, said transverse head portions and said longitudinal stem portions being respectively directed along directions parallel to the directions of said rows and columns, said T-shaped elements extending between and collectively defining two spaced substantially parallel faces of the panel, each of said T-shaped elements having a T-shaped surface disposed in one of said faces and having wall portions substantially normal to said faces extending from the periphery of said T-shaped surface in said one face to said other face; elongate connecting portions collectively defining the other of said faces and extending between said wall portions in the other of said faces for connecting adjacent T-shaped elements, said T-shaped elements in adjacent rows being staggered and intermeshed with each longitudinal stem portion along direction of said rows being disposed between ends of adjacent transverse head portions in adjacent columns and each transverse head portion along direction of said rows being disposed between adjacent longitudinal stem portions in adjacent columns, said T-shaped elements providing a lattice of elongate substantially uniform width channels each extending about the periphery of an associated T-shaped element and oriented parallel to one of the directions of said rows and columns with the continuity between said channels aligned along the directions parallel to said rows and columns being repeatedly interrupted by said T-shaped elements, whereby the stiffness of the panel is enhanced and excessive flexing thereof is prevented along all directions along said panel including the longitudinal and transverse directions of said columns and rows respectively when a person is supported on the mat, and said channels are provided to permit the flow of ventilating air therethrough.

3,940,184

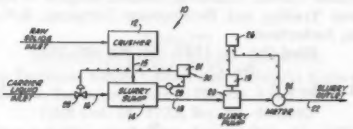
METHODS AND SYSTEMS FOR HYDRAULICALLY TRANSPORTING SOLIDS

David L. McCain, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed May 21, 1974, Ser. No. 471,871

Int. Cl.² B65G *53/30*

U.S. Cl. 302—14 **13 Claims**



1. A method of forming a slurry comprising particulate solids and a liquid carrier and transporting said slurry through a conduit comprising the steps of:

a. flowing a continuous stream of said carrier liquid into a sump;

b. introducing said particulated solids without fluid carrier into said sump so that a solids-carrier liquid slurry is formed therein;

c. pumping said slurry out of said sump and through said conduit;

d. measuring the flow rate through said conduit;

e. adjusting the pump speed during the pumping of said slurry out of said sump by an amount responsive to said measurements of variations in said flow rate in said conduit in a manner to maintain said flow rate substantially constant; and

f. changing the flow rate of said stream of carrier liquid flowing into said sump in inverse proportion to changes in the flow rate of particulated solids introduced therein so that the flow rate of slurry formed in said sump is maintained substantially constant.

3,940,185

CENTERING DEVICE FOR RAIL BRAKE MAGNETS ON VEHICLES

Ernst Katzer, Munich, Germany, assignor to Knorr-Bremse GmbH, Munich, Germany

Filed Apr. 2, 1975, Ser. No. 564,287

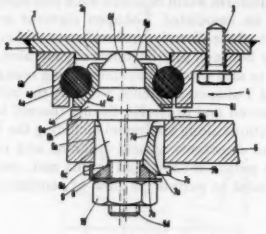
Claims priority, application Germany, Apr. 2, 1974, 2415858

Int. Cl.² F16C *29/02*; **F16D** *65/34*

U.S. Cl. 308—3 R **12 Claims**

1. A device for centering a rail brake magnet in the raised inoperative position with respect to the vehicle structure from which it is suspended, and comprising a centering element on one of said vehicle structure and magnet having a centering bore with a first conical surface around said bore, the other of said vehicle structure and magnet having a bore therein and

an eccentric sleeve rotatably received within said bore, a centering pin having a second conical surface thereon engageable with said first conical surface when the magnet is in the raised position, said pin having a peripheral portion eccentric



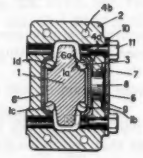
with respect to said first and second conical surfaces and rotatably received within said eccentric sleeve, and means for securing said eccentric sleeve to said other of the vehicle structure and magnet after adjustably rotating said sleeve.

3,940,186

ADJUSTABLE BALL GROOVE SLIDE

Sven Walter Nilsson, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands

Filed Oct. 11, 1973, Ser. No. 405,373
Int. Cl.² F16C *29/12*
U.S. Cl. 308—6 C 4 Claims



1. In a ball groove slide device including a beam having a longitudinal axis and a slide axially slidable thereon, the beam having a predetermined cross-section and the slide having a first aperture therethrough of cross-section corresponding generally to that of said beam and through which said beam extends in said sliding relationship, the device further including a plurality of balls in at least one recirculation path at least a portion of which path is parallel to said axis and is formed in part by an axially extending first ball-bearing groove in said beam, the improvement in combination therewith comprising a pressure member carrried by said slide and having an inner side adjacent said first groove in the beam and an opposite outer side, the inner side including an axially-extending second groove engaging balls in said first groove, and adjustment means carried by said slide for providing a selectively variable force on said pressure member inward against said balls which are thus urged against said first groove in the beam, for varying the play between said beam and said slide, and wherein said adjustment means comprises a plunger which is carried by said slide and contacts said pressure member, and locking means on said slide for securing said adjustment means and for urging said plunger inward against said pressure member with said selectively variable force, and wherein said slide comprises a wall adjacent said pressure member, and said wall includes therethrough a second aperture in which is situated said plunger, and said locking means comprises a cover contacting said plunger and fastener means urging said cover inward against said plunger which is thus urged inward toward said beam.

3,940,187

ANTIFRICTION BEARING FOR SLIDING MEMBERS

Minoru Suda, 220, Ooto, Yono, Saitama, Japan

Filed July 18, 1974, Ser. No. 489,546
Claims priority, application Japan, July 20, 1973, 48-80645
Int. Cl.² F16C *17/16*
U.S. Cl. 308—6 C 4 Claims

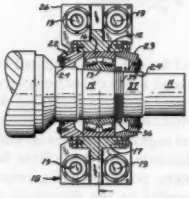
1. An antifriction bearing bush comprising a thin cylindrical outer sleeve having an end wall and at least three equidistant axially extending convex portions formed on the inner surface thereof except for one end, a cylindrical ball retainer fitting within said thin cylindrical outer sleeve having at least three axially oblong grooves on the outside thereof, the said oblong grooves being composed of two straight sections and two curved sections, one of said straight sections and an adjacent portion of each curved section being cut completely through said ball retainer, said straight section also having extended straight sectional grooves reaching the ends of said cylindrical ball retainer, the depth of said straight sectional grooves being complementary to said convex portions on said outer sleeve, two segments of said convex portion of said outer sleeve which overlie the ends of said straight section of said ball retainer being of less convexity than the remainder of said convex portion, balls within one portion of said oblong grooves which contact said convex portion and simultaneously extend beyond the inner surface of said ball retainer and balls within the remaining portion which are enclosed by the ball retainer and said outer sleeve, and means within the end of said sleeve not having an end wall to retain said ball retainer within said sleeve.

3,940,188

BEARING HOUSING ADAPTABLE TO REWORKED SHAFT BY REVERSAL

Robert Keith Newell, Cedar Rapids, Iowa, assignor to Pettibone Corporation, Chicago, Ill.

Filed May 22, 1974, Ser. No. 472,303
Int. Cl.² F16C *13/00*
U.S. Cl. 308—15 5 Claims



1. A bearing housing having positioning formations for cooperating with securing means to predetermine the axial location of a housing-base center along an axis extending through the bearing housing, and structure located with axial nonsymmetry with respect to said formations to provide a bearing chamber the center of which is axially displaced from said base center, said bearing housing being, in part at least, reversible so that the axial displacement of the center of the bearing-receiving chamber will be displaced axially in the

opposite direction from the direction of the original displacement, the bearing housing being adapted to receive a shaft end with its diameters increasing in the direction inwardly from the end of the shaft providing shaft dimensions within which the shaft can be reworked to bearing-contours similar to its original bearing-contours but relocated inwardly to match the inward shifting of the center of the bearing-receiving chamber upon reversal of the bearing housing parts.

3,940,189

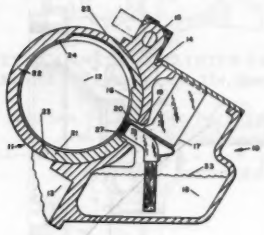
TRACTION MOTOR BEARING LUBRICATION ASSEMBLY

Richard J. Renk, and George F. Boller, both of Winona, Minn., assignors to Gladys D. Miller, Winona, Minn.

Filed Mar. 6, 1975, Ser. No. 556,129

Int. Cl.² B61F *17/08*; F16C *1/23*, *33/10*, *33/66*

U.S. Cl. 308—132 **25 Claims**



1. A bearing for use with a traction motor suspension assembly wherein a member is carried on the axle to reduce the oil losses through said bearing comprising,

a bearing body having an arcuate bearing surface defining an axial sleeve portion adapted to engage a surface of said axle,

said bearing body having a first recessed groove formed circumferentially in the periphery of said bearing surface into which said member extends and is rotated with said axle,

a passage communicating with said first groove, said passage being located to allow excess lubricant which enters said first groove to be moved into said passage by rotation of said member with said axle,

a second recessed groove in the periphery of said bearing surface, and,

means connecting said second groove with said first groove to allow excess lubricant from said second groove to move to said first groove.

13. A bearing as claimed in claim **1** wherein said passage communicates with said first groove at a point above the bottommost part of said first groove.

14. A bearing comprising,

a arcuate bearing surface sized to engage a journal,

a first groove in which a rotating member may move during rotation of a journal,

a passage communicating with said first groove to allow a lubricant to be moved away from said groove and into said passage by said member during rotation thereof,

a second groove, and

means connecting said second groove to said first groove so lubricant collecting in said second groove can move into said first groove and be moved by said member into said passage.

24. An assembly as claimed in claim **15** wherein said bearing is provided with a window and wherein said first groove is disposed axially from said window and said second groove is spaced axially outwardly from said first groove.

3,940,190

HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 288,864, Sept. 13, 1972, Pat. No. 3,846,282. This application Oct. 29, 1974, Ser. No. 518,926

Int. Cl.² C10G *35/08*

U.S. Cl. 208—137 **13 Claims**

1. A process for reforming a gasoline fraction which comprises contacting said fraction in the presence of hydrogen at reforming conditions with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 weight percent platinum or palladium, about 0.01 to about 2 weight percent iridium, about 0.01 to about 5 weight percent nickel, about 0.01 to about 5 weight percent of a Group IV-A metal, and about 0.1 to about 3.5 weight percent halogen, wherein the platinum or palladium, iridium, nickel, and Group IV-A metal are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium, iridium, and nickel are present in the corresponding elemental metallic states, and wherein substantially all of the Group IV-A metal is present in an oxidation state above that of the corresponding elemental metal.

3,940,191

MULTIPLE-ROW ROLLER BEARING

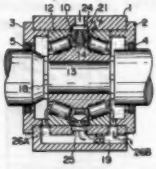
Shunzo Tomioka; Kinpei Okano, and Toshiyuki Kajiwara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 10, 1973, Ser. No. 404,892

Claims priority, application Japan, Oct. 13, 1972, 47-102487

Int. Cl.² F16C *1/24*

U.S. Cl. 308—187 **33 Claims**



1. A multiple row roller bearing comprising

at least two rows of roller bearings, each of said rows including inner and outer races for said roller bearings,

first means for separating the outer races of respective rows of said roller bearings, said first means including nozzle means for injecting lubricant to said roller bearings and discharge means for discharging said lubricant from said roller bearings,

second means for supplying said lubricant to said nozzle means, and

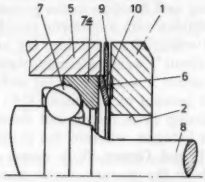
third means for exhausting said lubricant from said discharge means, said third means being independent and separated from said second means such that a positive flow of said lubricant through said roller bearings is effected.

3,940,192

HOUSING FLANGE FOR WORM GEAR BEARINGS

Gerhard Hagele, Hohenstadt, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed July 16, 1974, Ser. No. 489,034
Claims priority, application Germany, Aug. 1, 1973, 7328067
Int. Cl.² F16C *13/00*
U.S. Cl. 308—189 R 2 Claims



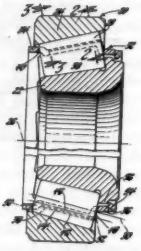
1. An arrangement for effecting a precisely determined axial force on a thrust bearing within a housing:
comprising a housing having a bearing race therein;
a cover on said housing;
a conical ring-like spring having an edge compressed by said cover to effect axial force of the other edge on said bearing race;
and an annular groove in said cover disposed to freely accommodate a bowed portion of said spring as it bows under compression, so as to maintain a precise force on said bearing by avoiding abutment between said bowed portion and said cover.

3,940,193

ROLLER BEARING SEPARATOR

Edward W. Molloy, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 356,772, May 3, 1973, abandoned. This application Jan. 30, 1974, Ser. No. 437,789
Int. Cl.² F16C *33/00*; B21D *53/12*
U.S. Cl. 308—218 13 Claims



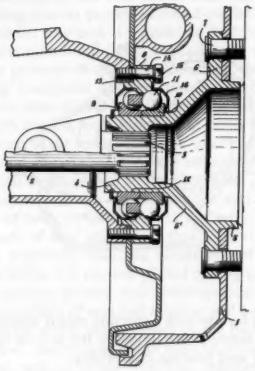
1. An angular contact roller bearing comprising
relatively rotatable inner and outer races having a common longitudinal axis,
a plurality of rollers disposed between said races in rollable engagement therewith,
said rollers having longitudinal axes angularly disposed with respect to said common longitudinal axis of said races about which said rollers respectively revolve during operation of the bearing, and
a separator rolled to annular form from a strip of sheet metal, said separator having windows receiving said rollers and comprising cylindrical end ring portions of equal diameter disposed on opposite sides of an imaginary conical surface defined by said longitudinal axes, said end ring portions being interconnected by a plurality of cross bars having an asymmetrical configuration and major portions angularly disposed with respect to said common longitudinal axis of said bearing engaging and guiding said rollers along a majority of their lengths.

3,940,194

WHEEL BEARING APPLICATION OF DRIVEN WHEELS FOR MOTOR VEHICLES

Sture Lennart Asberg, Partille, Sweden, assignor to SKF Nova AB, Goteborg, Sweden

Filed Nov. 5, 1973, Ser. No. 413,120
Claims priority, application Sweden, Nov. 6, 1972, 14307/72
Int. Cl.² F16C *33/30*
U.S. Cl. 308—236 2 Claims



1. A wheel bearing assembly, including same for a wholly unloaded, rigid rear shaft, comprising:
a. a sleeve portion;
b. drive means disposed in said sleeve portion, said drive means being adapted to transfer torsional moment from a drive shaft through a plurality of splines on said shaft which floatably engage the inner portion of said sleeve; and
c. a bearing disposed about said sleeve portion and comprising a moment-carrying, play-adjusted, inner-ring-rotated rolling bearing, said bearing comprising an inner ring member comprising two separate rings disposed directly adjacent to each other, and fitted on said sleeve portion, said two separate rings secured together on said sleeve portion between first and second axially spaced apart means located on said sleeve portion at opposite sides of said separate inner rings, said inner bearing rings being axially fixed in position relative to said sleeve independent of axial movement of said shaft, and a one-piece outer ring and rolling bodies disposed between said inner and outer rings.

3,940,195

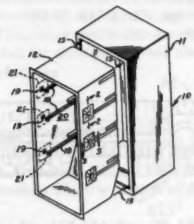
REFRIGERATION CABINET

Harry Lucian Tillman, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 11, 1974, Ser. No. 514,123
Int. Cl.² A47B *81/00*
U.S. Cl. 312—214 7 Claims

1. A refrigeration cabinet comprising: an outer shell; a relatively thin plastic liner spaced from said shell to provide an insulating space therebetween, said liner having a projecting

portion extending into said insulating space; cast resin foam insulation filling said insulating space between said shell and liner; and a thin parting agent sheet overlying said projecting



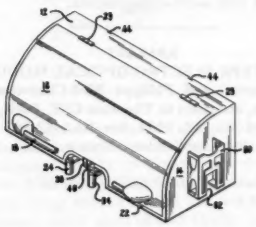
portion and having an edge area spaced from said projecting portion and attached to said liner to define a surrounding space about said projecting portion for preventing said cast resin foam from closely embracing said projecting portion.

3,940,196

SAFETY CABINET FOR BATHTUB FAUCETS

Donald F. Ketchel, 7375 9th St., Apt. 224, Buena Park, Calif. 90620

Filed Nov. 14, 1974, Ser. No. 523,678
Int. Cl.² A47B *55/00*
U.S. Cl. 312—237 **7 Claims**



1. A faucet cabinet adapted to enclose faucet knobs for the protection of young children comprising: an enclosure adapted to mount over and enclose at least one faucet knob, said enclosure having a cover operable between a closed position enclosing at least one faucet knob and an open position exposing enclosed faucet knobs, and, latching means for latching said cover in said enclosed position, said latching means having a release with a bias means for providing a predetermined magnitude of force in operating said release, said predetermined magnitude of force being such that said release is operable by an adult and is inoperable by a young child.

3,940,197

METHOD OF MAKING A GLOW DISCHARGE READOUT DEVICE

Abul Abbas Mesbahuddin Ahmed, Beauford Manor, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 468,356, May 9, 1974, Pat. No. 3,891,883, which is a continuation-in-part of Ser. No. 300,631, Oct. 25, 1972, Pat. No. 3,818,556. This application Mar. 26, 1975, Ser. No. 562,081
Int. Cl.² H01J *9/00*
U.S. Cl. 316—17 **3 Claims**

1. A method for making a readout device, comprising the steps of:

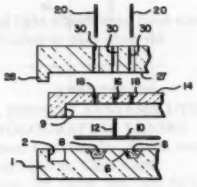
placing conductive material arranged in a predetermined pattern of anodes and cathodes on a fusible substrate provided with an integral raised frame,

locating conductive pins in contact with said material and extending in protruding relationship from said substrate,

locating a tube through said substrate,

heating said substrate to fuse said substrate in sealed encirclement around said tube and said pins and to adhere said anode and cathode conductive material to said substrate surface,

partially covering one of said cathodes with a coating of fusible material leaving an exposed portion of said partially covered cathode to provide a continuously energized cathode during operation of said readout device,



sealably adhering a transparent window on said frame to provide an envelope containing said pattern of anodes and cathodes,

introducing an illuminating type gas into said envelope through said tube, and

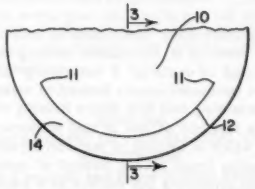
sealably closing said tube to provide a sealed envelope containing illuminating gas and anodes and cathodes with conductive pins protruding through said substrate and in contact with corresponding anodes and cathodes.

3,940,198

INTEGRAL MULTIFINGER CONTACT AND METHOD OF MAKING

Stephen Verner Andersen, Burbank, Calif., and Edwin Grant Swick, Bartlett, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 447,616, March 4, 1974, Pat. No. 3,905,318. This application Mar. 20, 1975, Ser. No. 560,420
Int. Cl.² H01R *39/00*
U.S. Cl. 339—5 M **3 Claims**



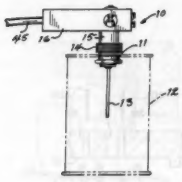
1. A one piece electrical wiper brush contact including a base portion adapted for attachment to a carrier, a plurality of slender, resilient, arc-like contact fingers, each extremity thereof integrally joined to the base, said contact fingers merging together at both regions of juncture with the base, the side edges of adjacent arc-like fingers being separated over substantially their entire length by a crescent shaped aperture, dimpled localized contact regions being formed in the fingers and substantially radially aligned thereon.

3,940,199

ROTARY CONTACTOR FOR THERMOCOUPLES

Oscar Frederick Ecklund, P.O. Box 279, Cape Coral, Fla. 33904

Filed Jan. 23, 1975, Ser. No. 543,406
Int. Cl.² H01R 39/00
U.S. Cl. 339—6 R 8 Claims



1. Connector means for use in electrically connecting first ends of a pair of stationary electrical leads to rotary thermocouple terminals mounted on a rotatable container, said thermocouple terminals being on a thermocouple projecting into the interior of said container for sensing the temperature of the contents therein, the second ends of said pair of stationary electrical leads being adapted to be electrically connected to terminals of a potentiometer responsive to voltage generated by said thermocouple, said connector means comprising:

a post-like rotary sub-assembly having a longitudinal axis about which it is adapted to rotate when said container rotates;

a stationary arm-like sub-assembly mounted on said post-like rotary sub-assembly;

said post-like rotary sub-assembly comprising, a base having mounted therein in electrically insulated relationship two contact pins one of which is formed of thermocouple material A corresponding to one material of said thermocouple and the other of which is formed of a different thermocouple material B corresponding to the other material forming said thermocouple, both of said pins having terminal portions at one end of said base for electrical connection with said pair of thermocouple terminals and said contact pin formed of material A projecting axially from the opposite end of said base, a slip ring sleeve formed of material B embracingly mounted in non-conductive relationship on said axially projecting pin portion with the end of said slip ring sleeve adjacent said base being electrically connected to said contact pin formed of material B, first sleeve bearing and/or brush means formed of material B embracing said slip ring sleeve, first conductor means formed of material B electrically connecting said first sleeve bearing and/or brush means to a first end of one of said stationary electrical leads and which is formed of material B, second sleeve bearing and/or brush means formed of material A embracing said projecting pin portion at a location spaced from said slip ring, and second conductor means formed of material A connecting said second sleeve bearing and/or brush means to a first end of the second of said stationary electrical leads and which is formed of material A;

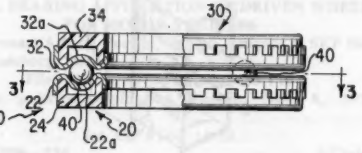
and, said stationary arm sub-assembly comprising, a body member receiving therein said axially projecting pin portion and providing seats for said first and second sleeve bearing and brush means, and said body member providing support for said first and second conductor means and said first ends of said stationary electrical leads.

3,940,200

ELECTRICAL CONDUCTOR ARRANGEMENT INCLUDING FLEXIBLE RACE CONSTRUCTION

Robert Z. Schreffler, 12817 Richmond St., Chester, Va. 23831

Filed Mar. 4, 1975, Ser. No. 555,277
Int. Cl.² H01R 39/00
U.S. Cl. 339—8 PB 8 Claims



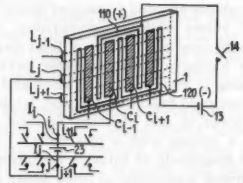
1. An electrical connector arrangement for conducting electrical current between rotating and non-rotating members, said arrangement comprising a first, non-rotating race means, a second, rotating race means spaced from said first race means and adapted to be connected to a rotating shaft, and bearing means located between said race means for providing electrical current conduction between said race means, at least one of said race means comprising an annular flexible race member constructed of an electrically conductive material and a support member for supporting the circumferential edges of said race member while leaving unsupported an annular central portion of said race member located between said circumferential edges, so that said race member makes flexible contact with said bearing means.

3,940,201

STORAGE-TYPE ELECTRO-OPTICAL MODULATOR

Francois Micheron, and Philippe Bied-Charreton, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 22, 1974, Ser. No. 472,307
Claims priority, application France, May 29, 1973, 73.19496
Int. Cl.² G02F 1/03; G03H 1/04
U.S. Cl. 350—3.5 11 Claims



1. A storage-type electro-optical modulator, designed for modulating a radiated energy beam under the control of electrical input signals, said modulator comprising: a plate of homogeneous material capable of switching, under the action of an electric field, from a first stable state exhibiting certain optical properties to a second state exhibiting different optical properties; said plate having two large faces and being equipped, parallel to one of said faces, with a first network of parallel coplanar electrodes interconnected for forming two interdigital comb structures, and with a second network of distinct coplanar electrodes interleaved with those of the first network; said plate furthermore being equipped, parallel to the other of said faces and at the opposite side to said first and second networks, with a third network of distinct coplanar electrodes parallel with a direction making an angle with the direction of the electrodes of said second network; the electrodes of said second and third networks being constituted by

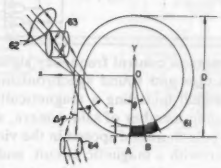
a photoconductive material transparent to said radiated energy beam; said modulator further comprising illuminating means, provided to drive conductive said photoconductive material during a phase of selective application of said electrical input signals to the electrodes of said second and third networks, and electrical erase means energizing said first network of parallel coplanar electrodes during an erase phase, means being provided for shutting off said illumination means during said erase phase.

3,940,202

LIGHT BEAM DEFLECTION SYSTEM

Makoto Kato, and Yoshihiro Okino, both of Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 319,674, Dec. 29, 1972, abandoned. This application Aug. 20, 1974, Ser. No. 498,934
Claims priority, application Japan, Dec. 31, 1971, 47-2483
Int. Cl.² G02B 5/32
U.S. Cl. 350—3.5 **2 Claims**



1. A light beam deflection system comprising a light beam deflection disc having a surface divided into a plurality of identical contiguous blocks of interference fringe patterns each occupying a sector of an annulus on the surface of said disc, said sector being defined by first and second radial lines, the fringe pattern within each of said blocks comprising approximately circumferential fringe lines having a given radial spacing along said first radial line and a greater radial spacing along said second radial line, the radial spacing between said circumferential fringe lines along radial lines intermediate said first and second radial lines increasing in the direction from said first radial line to said second radial line,

means for rotating said disc, and

means for focusing a coherent light beam to a radially extending line on a portion of said disc having an interference fringe pattern block, the width of said line in the circumferential direction being substantially less than the circumferential width of said block, said beam being deflected as said disc is rotated.

3,940,203

IMAGE-FORMING APPARATUS

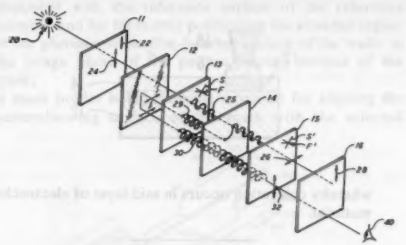
Joseph Anthony La Russa, Yorktown Heights, N.Y., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.

Filed Apr. 1, 1975, Ser. No. 564,188
Int. Cl.² G02B 5/32, 27/28
U.S. Cl. 350—3.5 **6 Claims**

5. Apparatus for forming at or closer than infinity a dispersion-free image of a polychromatic primary image comprising:

a reflection-type monochromatic holographic analog of a concave mirror arranged to receive light from said primary image on a side of the analog; and

optical means associated with said analog for reflecting a fraction of the light transmitted from said primary image through said analog back to the other side of the analog of said mirror for reflection thereby; for transmitting light so reflected to an observer; and for blocking the direct



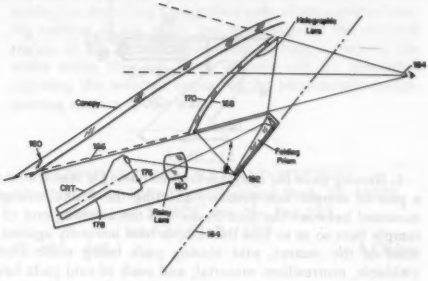
transmission of light transmitted from said primary image through said analog to said observer.

3,940,204

OPTICAL DISPLAY SYSTEMS UTILIZING HOLOGRAPHIC LENSES

Roger J. Withrington, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 23, 1975, Ser. No. 543,604
Int. Cl.² G02B 5/32, 27/00
U.S. Cl. 350—3.5 **25 Claims**



1. A display system having a holographic lens constructed with two coherent sources located relatively close to entrance and exit pupils thereof, and which deviates the axial ray coming from an object surface through an off-axis angle into an exit pupil and which has a focal surface with axial coma and axial astigmatism, said display system having

first means along said axial ray between said object surface and said holographic lens to compensate said axial coma, and

second means along said axial ray between said object surface and said holographic lens to compensate said axial astigmatism.

3,940,205

ELECTROCHROMIC DEVICE HAVING AN INDIUM ELECTRODE

Richard Seely Crandall, and Brian Wilfred Faughnan, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 9, 1974, Ser. No. 504,358
Int. Cl.² G02F 1/36
U.S. Cl. 350—160 R **16 Claims**

1. An electrochromic device comprising:

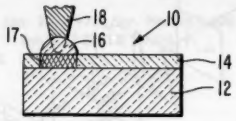
a substrate,

a layer of electrochromic material on said sustrate,

an electrolyte on at least a portion of said layer of electrochromic material, and

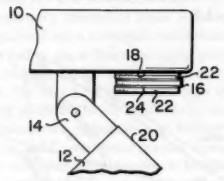
an electrode for contacting said electrolyte, said electrode

being of a material capable of dissolving and forming positive ions when in contact with said electrolyte



whereby coloration occurs in said layer of electrochromic material.

3,940,206
BIASING PADS FOR EYEGLASS FRAMES
Erich Freund, 4845 California St., San Francisco, Calif. 94118
Filed Dec. 30, 1974, Ser. No. 537,095
Int. Cl.² G02C *5/14*
U.S. Cl. 351—111 **1 Claim**

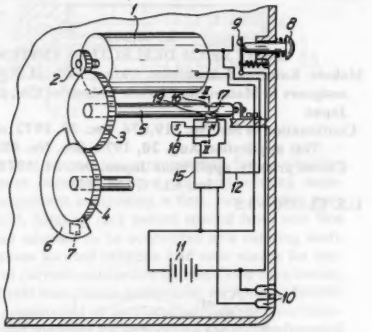


1. Biasing pads for eyeglass frames having a lens frame and a pair of temple bars pivotaly abutting the frame, said pads mounted between the lens frame and the abutting end of the temple bars so as to bias the temple bars inwardly against the head of the wearer, said biasing pads being made from a yieldable, nonresilient material, and each of said pads having an adhesive layer thereon whereby said pads may be joined in a plurality of plys so the effective thickness of the pads may be selectively varied as desired.

3,940,207
SOFT, TOUGH LOW REFRACTIVE INDEX CONTACT LENSES
Archie E. Barkdoll, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 152,076, June 11, 1971, abandoned. This application Feb. 26, 1974, Ser. No. 445,916
Int. Cl.² G02C *7/04*
U.S. Cl. 351—160 **12 Claims**

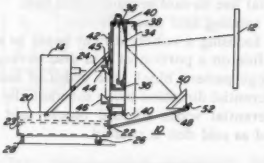
1. A soft, wettable, transparent contact lens for the eye constructed from at least one soft, tough, fluorine-containing polymer selected from the group consisting of tetrafluoroethylene/perfluoro(methyl vinyl ether), tetrafluoroethylene/perfluoro(methyl vinyl ether)/vinylidene fluoride, tetrafluoroethylene/perfluoro[2(2-fluorosulfonylethoxy)propyl vinyl ether], vinylidene fluoride/hexafluoropropylene/tetrafluoroethylene, and vinylidene fluoride/hexafluoropropylene said lens having a concavoconvex structure with the concave surface conforming substantially to the shape of the eye surface, an optical zone, a refractive index in the range 1.3 to 1.4, a Clash-Berg torsion modulus in the range about 95 to about 1000 pounds per square inch, a Shore Durometer (A) hardness of 90 or less, a tensile strength (break) of at least about 100 psi, an elongation (break) of at least about 160 percent and a tear strength of at least about 5 lb/linear inch.

3,940,208
CONTROL FREQUENCY GENERATOR FOR A MOVIE CAMERA
Johann Roth, Schwabhausen, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 21, 1974, Ser. No. 434,850
Claims priority, application Germany, Jan. 26, 1973, 2303932
Int. Cl.² G03B *31/00*
U.S. Cl. 352—12 **11 Claims**



1. In a movie camera, a control frequency signal generator for producing a picture and sound synchronizing sinusoidal control frequency signal including a magnetically discontinued region in a rotating member of said camera, a permanent magnet having one pole thereof disposed in the vicinity of said region to define therewith a magnetic circuit, and a magnetic flux sensing means disposed between said region and said pole of said permanent magnet and operable for producing said control frequency signal from the flux changes within the magnetic circuit during rotation of said member.

3,940,209
PROJECTOR CASE ASSEMBLY
Robert Portner, Blackwood, and Phillip Miller, Turnersville, both of N.J., assignors to Magna Mir, Inc., Philadelphia, Pa.
Filed July 12, 1974, Ser. No. 487,962
Int. Cl.² G03B *21/28*
U.S. Cl. 353—79 **3 Claims**



1. A projection case assembly unit for utilization with a standard projector and a system of mirrors which together provide enlarged exact images on a receiving surface removed from said projection case assembly comprising:

a two-part foldable device having first and second sides which when folded, said sides are substantially parallel one to another to provide a compartment therebetween and which when said device is opened, said sides provide a base member and an upright member;

means connected to said base member for supporting a projector upon said base member;

a first mirror which is convex;

means for securing said first mirror on said upright member with said reflective surface of said mirror facing outwardly from said base member;

a second mirror which is substantially flat; and

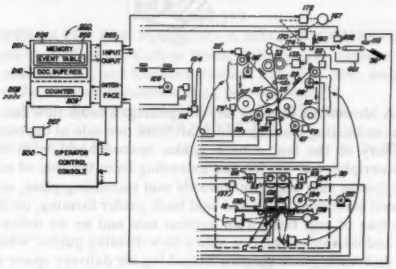
an extension member removably attached to said device and when attached extending outwardly from said device including means by which said second mirror is attached thereto and positioned to receive a projected beam and direct the beam against said first mirror whereby an enlarged image can thereby be reflected onto the receiving surface.

3,940,210

PROGRAMMABLE CONTROLLER FOR CONTROLLING REPRODUCTION MACHINES

James M. Donohue, Los Alamitos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 12, 1974, Ser. No. 496,661
Int. Cl.² G03G *15/00*
U.S. Cl. 355—14 **34 Claims**



1. In a reproduction machine for producing impressions of an original to be reproduced, the reproduction machine having a photosensitive member and a plurality of discrete operating components cooperable with one another and the photosensitive member to electrostatically produce impressions on support material, the improvement comprising:

a programmable controller for use in programming the machine to produce one or more reproduction runs, said controller including program storage means adapted to retain a master control program, said controller being adapted on programming to produce, in accordance with said master program, an individual set of instructions for actuating said components in integrated association with one another for each reproduction run programmed.

3,940,211

STEP-AND-REPEAT PROJECTION ALIGNMENT AND EXPOSURE SYSTEM

Karl-Heinz Johannsmeier, Mountain View, Calif., assignor to Kasper Instruments, Inc., Mountain View, Calif.

Continuation of Ser. No. 126,769, March 22, 1971, abandoned. This application Sept. 12, 1973, Ser. No. 396,413
Int. Cl.² G03B *27/42*
U.S. Cl. 355—53 **66 Claims**

1. A projection alignment and exposure system comprising:

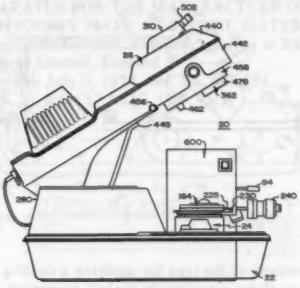
a base unit;

a floating unit floatingly supported on the base unit;

a wafer chuck, a reference member, a projection lens system, and a mask holder mounted on the floating unit so that the projection lens system is operable for producing an image of a selected region of a photosensitive-film-bearing surface of a wafer supported on the wafer chuck at a pattern-bearing surface of a mask supported on the mask holder and for producing an image of the pattern-bearing surface of the mask in an image plane positioned between the reference member and the wafer chuck and oriented parallel to a reference surface of the reference member;

said wafer chuck being movably mounted for positioning the photosensitive-film-bearing surface of the wafer in abutment with the reference surface of the reference member and for thereafter positioning the selected region of the photosensitive-film-bearing surface of the wafer at the image plane of the pattern-bearing surface of the mask;

said mask holder being movable mounted for aligning the patternbearing surface of the mask with the selected



region of the photosensitive-film-bearing surface of the wafer; and

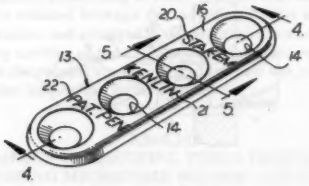
an optical unit mounted on the base unit above the mask holder for providing a magnified view of the pattern-bearing surface of the mask and the image of the selected region of the photosensitive-film-bearing surface of the wafer while they are being aligned and for thereafter exposing the selected region of the photosensitive-film-bearing surface of the wafer.

3,940,212

FURNITURE BRACKET AND METHOD

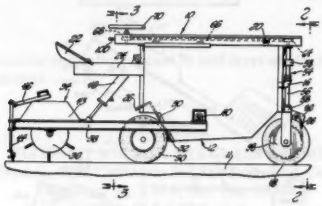
Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035

Filed Apr. 2, 1975, Ser. No. 564,547
Int. Cl.² F16B *12/00*
U.S. Cl. 403—405 **3 Claims**



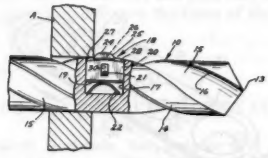
1. A bracket for securing vertically related, wood framed furniture pieces together comprising a generally rectangular, unitary metal body having length, width, and thickness dimensions with said length and width dimensions defining outer and inner faces, a plurality of aligned, longitudinally spaced openings extending through said thickness for receiving wood screws, said body on said inner face being equipped with a continuous perimetric flange extending generally perpendicularly away from said inner face, said inner face also being equipped with a generally frusto conical projection about each of said openings, each projection extending away from said inner face a distance from about 0.002 to about 0.025 inch further than said flange whereby said projections are adapted to bightingly engage said wood frames prior to engagement of said flange with said frames, said projections providing generally frusto conical recesses in said top surface to permit countersinking said wood screws.

3,940,213
DRIVE SYSTEM
Rymer H. Smith, Burgoon, Ohio, assignor to Wikel Manufacturing Co. Inc., Sandusky, Ohio
Filed Nov. 1, 1974, Ser. No. 519,837
Int. Cl.² E01C 19/18
U.S. Cl. 404—111 23 Claims



1. A vehicle of the type for applying a coating to a surface such as applying a sealant to asphalt pavement, said vehicle comprising: body means including reservoir means for storing and distributing a fluid, two driven wheels disposed in spaced-apart relationship along the longitudinal axis of said body means and adapted for continuous engagement with a support surface, one of said driven wheels being dirigible, support wheels disposed laterally of the longitudinal axis of said body means and spaced from said dirigible driven wheel, and variable drive means for driving said driven wheels.

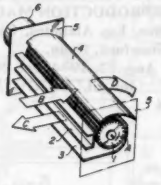
3,940,214
DRILL BIT WITH DEBURRING DEVICE
Daryl E. Waschek, 1614 Sharon Drive, North Mankato, Minn. 56001
Filed Feb. 10, 1975, Ser. No. 548,250
Int. Cl.² B23B 51/08
U.S. Cl. 408—26 5 Claims



1. In a drill bit for drilling a hole through a piece of metal whereby burrs are formed on the edges of the hole, said bit having a shank for connection to a power source and a boring body comprising spiral auger portions separated by spiral grooves,

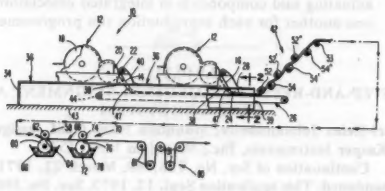
a. one of said spiral auger portions having an outwardly opening recess therein,
b. a deburring attachment disposed in said recess for radial sliding movement between outwardly extended and retracted positions,
c. stop means on the auger portion engaging said attachment to limit outward sliding movement thereof,
d. spring means disposed between the bit and the attachment yieldably biasing the attachment toward its outwardly extended position, and
e. said attachment including a cutter having a sharp outer cutting edge projecting beyond the peripheral surface of the auger portion to remove said burrs from the metal portions surrounding the hole.

3,940,215
BLOWER
Michimasa Hori, Yao, and Takeshi Aizawa, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 26, 1973, Ser. No. 427,733
Claims priority, application Japan, Dec. 28, 1972, 48-3330; May 14, 1973, 48-53431; Oct. 18, 1973, 48-117591
Int. Cl.² B23B 39/00
U.S. Cl. 415—54 18 Claims



1. A blower for blowing air, comprising: a cross flow fan; a vortex stabilizing plate spaced apart from one side of the outer periphery of the fan; a back guider spaced apart from the outer periphery of the fan and extending from the side of said fan opposite said one side towards said stabilizing plate, said fan, said stabilizing plate and said back guider forming, on the same side of said fan, an air suction side and an air delivery side; and on said air suction side a flow dividing guider, which with said back guide forms a branching air delivery space on the opposite side of said air suction side, for dividing the air flow and enabling the air to flow in substantially two opposite directions from said air suction side back to said air delivery side and to said branching air delivery space, respectively.

3,940,216
APPARATUS FOR FORMING A NONWOVEN FIBROUS WEB
Thomas L. Hinckley, Millville, N.J., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Jan. 30, 1975, Ser. No. 545,499
Int. Cl.² B32B 5/12, 7/14
U.S. Cl. 425—83 4 Claims



1. In an apparatus for forming a unitary nonwoven fibrous web from multiple laps of staple fibers:

A. lap forming means for forming said laps of staple fibers and for generating air currents;
B. a lap-confining channel defined in part by an upper, substantially horizontal delivery run of an air-impervious conveyor, said channel having an open down-stream end;
C. shield means for defining a flow path between the lap forming means and the lap-confining channel for directing said laps and air currents into said lap-confining channel with said laps in overlying relationship with each other and with the upper delivery run of the air-impervious conveyor;
D. drive means for moving said air-impervious conveyor to convey said overlying laps in a downstream direction

through the open downstream end of said lap-confining channel; the improvement comprising:

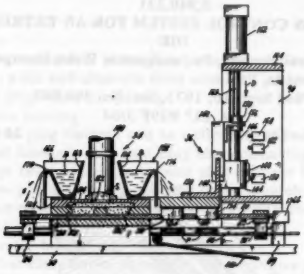
E. a fiber spreading and reorienting section adjacent the upper delivery run of the conveyor downstream of the lap-confining channel, said fiber spreading and reorienting section including a plurality of bowed rolls spaced from each other in the machine direction of web formation with their axles extending in the cross-machine-direction of web formation, said axles being disposed along a generally upwardly inclined path from the horizontal delivery run of the conveyor, said generally upwardly inclined path being at an acute angle to the direction of movement of said delivery run, and the most upstream bowed roll of the fiber spreading and reorienting section being in adjacent, noncontacting relationship with the horizontal delivery run for receiving the overlying laps of staple fibers without compressing said laps against said delivery run.

3,940,217

APPARATUS FOR FORMING A SHAPED COMESTIBLE

John P. McCarthy, College Point; John Moyer, Garden City, both of N.Y., and Leonard Fischer, Elkridge, Md., assignors to DCA Food Industries, Inc., New York, N.Y.

Filed July 23, 1974, Ser. No. 491,468
Int. Cl.² A22C *7/00*
U.S. Cl. 425—98 **26 Claims**



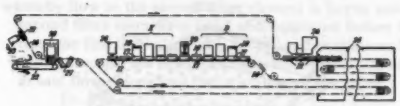
26. A machine for the formation of a shaped comestible from a foodstuff slurry, said machine comprising a forming station and a removing station, a forming plate having at least one forming cavity therein of a predetermined outer configuration for use in forming said foodstuff into a shape having said outer configuration, means mounting said forming plate for movement of said forming cavity between said forming station and said removing station, foodstuff delivery means in operative relation to said forming station for periodically supplying said forming cavity with a predetermined amount of said foodstuff, means in operative relation to said forming station for use in coating the unfilled forming cavity and the surface of said foodstuff delivered to said forming cavity with a release agent for aiding in the subsequent release of formed foodstuff from said forming cavity, means for use in preventing foodstuff not in said forming cavity from leaving said forming station, a punch in operative relation to said removing station and being of substantially the same outer configuration as said forming cavity, means mounting said punch for movement between a normal position wherein said punch does not intersect said forming cavity located at said removing station and an extended position wherein said punch intersects and extends into said forming cavity located at said removing station, means for operating said foodstuff delivery means to supply said predetermined amount of foodstuff and fill said forming cavity, means for transporting said filled forming cavity from said forming station to said removing station into alignment with said punch, control means including means being constructed and arranged to operate said punch from said normal to said extended position to urge said foodstuff from said filled forming cavity only upon said forming cavity being aligned therewith and further including means being constructed and arranged for operating said transporting means to move said forming cavity from said removing station toward said forming station only upon said punch returning to said normal position.

3,940,218

APPARATUS FOR THE MANUFACTURE OF CONFECTIONERY MADE OF PLURAL MATERIALS

Gordon Steels, Peterborough, England, assignor to Baker Perkins Holdings Limited, England

Filed July 3, 1974, Ser. No. 485,591
Int. Cl.² A23G *3/22, 3/12*
U.S. Cl. 425—112 **6 Claims**



1. Apparatus for moulding confectionery, comprising an endless conveyor, a series of moulds, each of which is divided into a first half attached to the conveyor and a second half which is hinged to and normally aligned with the first half, said conveyor carrying the moulds in sequence past a filling station, through a cooling zone to a folding station, then to an unfolding station and then to a discharge station and back to the filling station, a depositor at the filling station which is arranged to deposit different materials into moulding cavities in each half of each mould, mechanism disposed at the folding station for folding the second half of each mould about its hinge against the first half and effecting deposition of the contents of the moulding cavities thereof into the moulding cavities of the first half, mechanism disposed at the unfolding station for returning the folded second half of each mould into alignment with its first half, and means for inverting the moulds prior to arrival at the discharge station and turning them to cause their moulding cavities to face upwardly during their return to the filling station.

2. Apparatus according to claim **1**, which includes a further depositor situated between the unfolding station and the discharge station and arranged to deposit a third material into the moulding cavities of the fixed halves only of the moulds, and in which the moulds are arranged to traverse the cooling zone again after leaving the further depositor.

3,940,219

COMPACT TELESCOPING TISSUE PROCESSING, EMBEDDING MICROTOME HOLDER AND STORAGE RECEPTACLE

John E. P. Pickett, 3323 Pinafore Drive, Durham, N.C. 28212; Thomas D. Kinney, 3120 Devon Road, Durham, N.C. 27707, and Gene M. Winders, 5332 N. Willowhaven Drive, Durham, N.C. 27705

Filed July 11, 1974, Ser. No. 487,463
Int. Cl.² B65D *11/00, 81/18*
U.S. Cl. 425—117 **8 Claims**

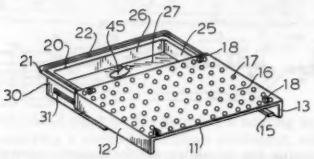
1. A composite histologic tissue structure useful for transporting a tissue specimen through processing fluids during processing, providing a mold for embedding the specimen, holding the embedded specimen during microtome cutting and covering the remaining embedded specimen following cutting, comprising:

a. a rectangular open rigid mold and microtome block holding member formed by interconnecting smooth surfaced rectangular end and sidewalls with the interior wall surfaces thereof being formed with means for securement of a molded block thereon and the exterior wall surfaces

thereof being formed to provide an indicia marking area to identify the specimen;

b. a rectangular pan receptacle and storage cover member formed by a thin rectangular bottom wall and interconnecting rectangular end and sidewalls, said pan and mold members being dimensioned such that said pan member walls may rest within said mold member walls during processing through processing fluids, the wall edges on one open end of said mold member having means for being detachably secured to the top wall edges of said pan member during the molding of said block; and

c. a top receptacle member formed by a central rectangular perforated wall and interconnecting rectangular sidewalls extending perpendicularly from the edges thereof, said top member sidewalls having means for detachably securing said mold member to said top member with said central wall covering said pan member while said pan



member is resting within said mold member whereby said top member may combine with said mold and pan members to form a perforate receptacle having the depth of said pan section for purposes of processing through said liquids;

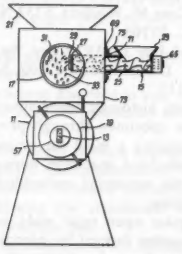
said mold and pan members in combination with said top member providing a receptacle for transporting the tissue specimen through the processing fluids, said mold member in combination with said pan member providing an embedding unit for molding and housing a paraffin body of depth greater than that of said receptacle used in processing, said mold member providing an exterior surface for clamping said mold member and the specimen embedded therein between the opposing jaws of a microtome clamp for presenting the embedded specimen to a microtome blade for cutting, and said mold member in combination with said pan member providing a housing for protecting the remaining specimen following cutting.

3,940,220

METHOD AND EQUIPMENT FOR THE MANUFACTURE OF VARIEGATED DETERGENT BARS

Alessandro D'Arcangeli, Castelgandolfo, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 206,412, Dec. 9, 1971, abandoned. This application Jan. 7, 1974, Ser. No. 431,112
Claims priority, application Italy, Dec. 29, 1970, 55693/70
Int. Cl.² B29F *3/12*
U.S. Cl. 425—131.1 **1 Claim**



1. Apparatus for manufacturing a variegated detergent bar which comprises:

a. first detergent plodding means,

b. second detergent plodding means,

c. a vacuum chamber communicating with said first and second plodding means,

d. a final third plodding means located below and communicating with said vacuum chamber,

e. said final plodding means including a mixing worm having a predetermined diameter

f. means for regulating the rate of feed to said final plodding means to leave from 30 to 70 percent of said worm immediately below said vacuum chamber uncovered during operation,

g. extrusion means including a pressure plate with a plurality of holes located at the downstream end of said final third plodder means.

h. rotating and cutting means disposed downstream from said extrusion means for imparting a transverse or radial motion to detergent passing through said pressure plate and cutting extruded detergent to desired length,

i. compression means disposed downstream from said rotating and cutting means,

j. said compression means including a chamber having a length less than one half of said predetermined diameter of said worm and,

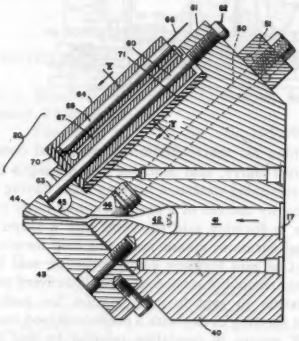
k. final extrusion means disposed downstream from said compression means for forming said detergent into bar shape.

3,940,221

THICKNESS CONTROL SYSTEM FOR AN EXTRUSION DIE

Frank R. Nissel, Ambler, Pa., assignor to Welex Incorporated, King of Prussia, Pa.

Filed Sept. 10, 1973, Ser. No. 396,008
Int. Cl.² B29F *3/04*
U.S. Cl. 425—141 **24 Claims**



1. In an extrusion die for continuously producing a sheet of material that has a substantial width in comparison to its thickness, the combination which comprises: means forming a slit which extends along the width of said die, said slit having an opening of variable thickness, means continuously forcing said material through said slit to form said sheet, slit opening control means including a plurality of spaced-apart elongated members each having capacity to expand and contract thermally, and each operatively arranged to adjust the slit opening at an individual location to control the sheet thickness at said location, a plurality of individual cooling means each connected and structurally located in heat exchange relationship with one of said elongated members upstream of said slit opening for positively cooling said elongated member, and a plurality of individual heating means also connected and structurally located in heat exchange relationship with each said elongated member to heat each said elongated member,

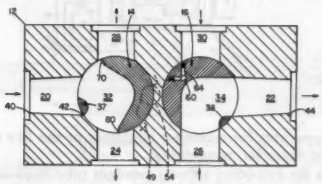
means for individually alternately actuating and deactivating said heating means, said heating means having capacity to overcome the cooling of said cooling means on the elongated member with which they are associated, insulating means interposed between said die and both said heating and cooling means, such that the functions of said elongated members and the remainder of the die are substantially thermally independent of each other.

3,940,222

FILTER CHANGING VALVE UNIT

Julius Zink, Yarmouth Port, Mass., assignor to J. Zink Co., Inc., Yarmouth Port, Mass.

Continuation-in-part of Ser. No. 326,019, Jan. 23, 1973, abandoned. This application May 23, 1974, Ser. No. 472,614
Int. Cl.² B29B 1/04
U.S. Cl. 425—199 10 Claims



2. In combination with extrusion apparatus having a liquid source, a die and alternate filter elements, an interconnected double plug valve comprising

a valve housing

an inlet plug element and an outlet plug element seated in said housing, each said plug element having a flow passage therethrough, said inlet plug element having initial flow passage means, and said outlet plug element having vent passage means communicating with the exterior of said valve,

said valve housing having

a first filter outlet passage to the first filter element and first return passage therefrom

a second filter outlet passage to the second filter element and second return passage therefrom

a source inlet passage from the source to said inlet plug element

a die outlet passage from said outlet plug element to the die

said valve housing having two spaced bores defining internal housing surfaces, said passage having spaced openings in said housing surface

said plug elements being rotatably mounted within said housing bores and having external surfaces of revolution cooperating with said internal housing surfaces

said plug flow passages at their opposite ends having spaced openings in said plug element surfaces

each said housing bore having at least three said spaced openings in its internal housing surface,

the said flow passage spaced openings of the said plug element mounted in said bore being alternately connectable to selected pairs of said housing passage openings

and control means including connecting means between said plug elements for rotating said plug elements with respect to said housing

said inlet plug element being rotated between an initial position in which said inlet plug flow passage connects said source inlet passage with said first filter outlet passage and a position in which said inlet plug flow passage connects said source inlet passage with said second filter outlet passage,

said outlet plug element being rotated between an initial position in which said outlet plug flow passage connects said first return passage with said die outlet passage and a final position in which said outlet plug flow passage connects said second return passage with said die outlet passage

said control means initially rotating said inlet plug element to a filling position in which said inlet plug initial flow passage means connects said source inlet passage with said second filter outlet passage, without rotating said outlet plug element,

said outlet plug vent passage means communicating with said second return passage in said filling position of said inlet plug element

said control means thereafter rotating both plug elements at different rates and completing the rotation of both plug elements simultaneously

said vent passage means being removed from communication with said second return passage by rotation of said outlet plug element from its said initial position

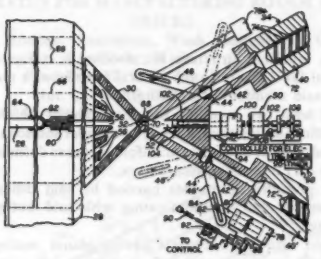
whereby flow to the second filter element is begun and the second filter element is filled and deaerated before flow from the first filter element is cut off, and continuous flow from source to die is maintained without inclusion of air in said flow throughout the operation of the valve.

3,940,223

INJECTION OF PLASTIC IN MOLDING MACHINE

John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Greenbrook, N.J.

Filed Dec. 21, 1973, Ser. No. 427,333
Int. Cl.² B29F 1/02, 1/06
U.S. Cl. 425—244 8 Claims



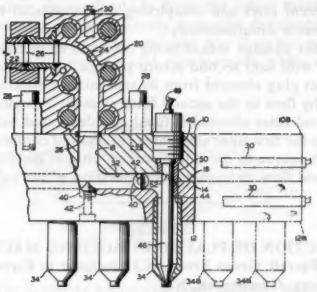
1. Injection molding apparatus including an injection mold that opens for transfer of the injected material from the mold and that closes for the start of a subsequent injection cycle, a first and a second plasticizer, each of which fully charges the mold with the same kind of hot plastic material as the other plasticizer for alternate injection cycles, passages through which both plasticizers communicate with the mold, valve means for selectively shutting off the communication of each of the plasticizers from the mold for each alternate cycle, and control means connected to the valve means to shut off communication of the first plasticizer from the mold at the end of an injection operation of the first plasticizer and before the fully charged mold opens, the control means including means for operating the valve means to put the second plasticizer in communication with the mold following the next closing of the mold and while the first plasticizer is recovering for its next injection operation, characterized by the passages from the two plasticizers including a nozzle that connects with the mold at the entrance of a runner passage of the mold, said passages including a passage through the nozzle and branch passages from said nozzle passage to each of the plasticizers, the valve means being in said branch passages, means to draw back plastic material from the runner at the conclusion of each injection operation communicating with said nozzle and being located at the branch passages end of said nozzle.

3,940,224

CONSTANT VELOCITY MANIFOLD FOR INJECTION MOLDING MACHINE

Donald F. Armour, Bloomfield, Conn., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed Jan. 16, 1974, Ser. No. 433,879
Int. Cl.² B29F 1/00
U.S. Cl. 425—247 2 Claims



1. A manifold structure for dividing a stream of molten material for delivery to the several cavities of a molding machine, said manifold comprising:

a. at least two manifold members one of which members defines an inlet passageway of circular sectional area (A), and at least one other manifold member defining a plurality (N) of outlet passageways,

b. a plurality of nozzles carried by said other manifold member and communicating with said outlet passageways,

c. said manifold members having planar mating surfaces which cooperate to define at least one circular cross passageway the midpoint of which cross passageway communicates with said inlet passageway to define two symmetrically arranged arcuate branches, the cross sectional area of said cross passageway branches being fractionally reduced from that of said inlet passageway inversely as related to the number (N) of such outlet passageways,

d. flow splitting passageway defining means also defined in said planar mating surfaces for connecting at least two outlet passageways to said cross passageway, said outlet passageways oriented parallel to one another and adapted to receive said nozzles perpendicularly with respect to said planar mating surfaces,

e. said cross passageways and flow splitting passageways providing equal length paths for said molten material to each of said outlet passageways, and

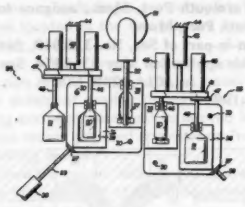
f. a plurality of elongated heating elements mounted in said one manifold member and extending coaxially into said outlet passageways and into said nozzles, and a faired collar for each such heating element, each collar being of generally annular cross section and including a fillet portion at the junction between said flow splitting passageway defining means and said outlet passageways to minimize the impedance to the flow of molten material being channeled from one to the other of these passageways.

3,940,225

BLOW MOLDING APPARATUS FOR STAGED INFLATION OF AN EXTRUDED PARISON

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 359,062, May 10, 1973, abandoned, which is a division of Ser. No. 103,624, Jan. 4, 1971, Pat. No. 3,767,747. This application Jan. 13, 1975, Ser. No. 540,637
Int. Cl.² B29C 5/06, 17/07
U.S. Cl. 425—326 B 15 Claims



13. Apparatus for making a container or the like of a thermoplastic material, comprising:

means for extruding a freely pendant tube from an annular orifice at a first station;

a pre-form blow mold, said mold having an interior cavity;

means for moving said pre-form mold to said first station, for enclosing the pre-form blow mold about said tube and for shifting said tube in said mold to a second station;

blow tube means selectively insertable into said tube at said second station for blowing said tube into a pre-form to fill the interior cavity of said pre-form mold and for supporting said blown pre-form independent of said pre-form mold;

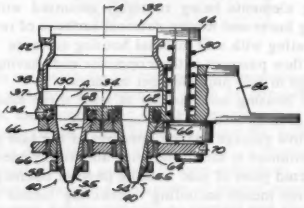
a final blow mold having an interior cavity the shape and size of the container and being reciprocable between said second station and a third station for enveloping said blown pre-form and accomodating the expansion of said pre-form to the size and shape of the container.

3,940,226

APPARATUS FOR DISPENSING DOUGH IN A PATTERN UTILIZING MOVEABLE NOZZLES

Albert F. L. Verhoeven, Grand Rapids, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.

Filed July 2, 1973, Ser. No. 375,667
Int. Cl.² A21C 11/16
U.S. Cl. 425—375 15 Claims



7. Apparatus for dispensing dough in a predetermined pattern onto a surface comprising, in combination: a support; a dough dispensing chamber secured to said support; one or more nozzles connected to the bottom of said chamber for dispensing dough from said chamber onto said surface, said nozzles mounted to said chamber for swivel movement relative said chamber and said support, the axis of each nozzle being rotatable at an angle to the direction of movement of dough from said chamber into said nozzles; plate means inter-

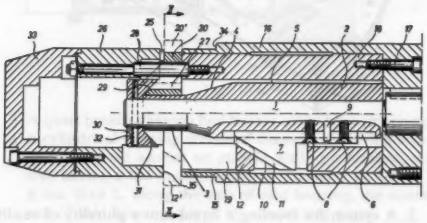
connecting said one or more nozzles jointly together, said plate means having a plurality of spaced openings through which each of said one or more nozzles extend; and drive means for moving said plate means circuitously with the plane of said plate means, said drive means when actuated driving said one or more nozzles circuitously by said plate means simultaneously together relative both said plate and said support causing said nozzles to deposit dough onto said surface in a preselected swirl design.

3,940,227

EXPANSIBLE MANDREL

Georg J. Strasser, Schutzengutli 19, CH-9220 Bischofszell, Switzerland

Filed June 20, 1974, Ser. No. 481,396
Int. Cl.² B29C *17/00*; B29D *23/00*
U.S. Cl. 425—392 **3 Claims**



1. An expansion mandrel for forming an internal annular groove in a tubular element of a synthetic plastic material comprising first and second groups of plate segments being positionable alternately in side-by-side relation in the expanded position, said first plate segments being larger than said second plate segments, means on said mandrel for mounting said first group of plate segments for movement inwardly and outwardly in a radial plane of the mandrel, an operating rod axially reciprocable along the longitudinal axis of the mandrel, a conical portion on said rod engageable with said first plate segments to cam said first segments radially outwardly into the expanded position upon axial movement of said rod in a first direction, a plurality of wedge-shaped elements on said rod subsequent to said conical portion with respect to said first direction of movement and having inclined surfaces thereon with dove-tail guides therein slidably engaging said second segments, said second plate segments being movable axially and then radially, and stop means on said mandrel for stopping the axial movement of said second segments in the said radial plane of said first segments so that axial movement of said rod in said first direction will cam said second segments radially outwardly into the expanded position in alternate side-by-side relation with said first segments.

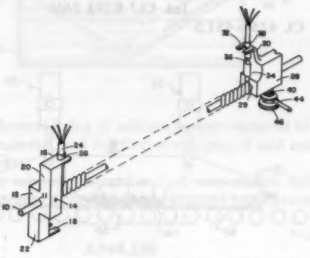
3,940,228

TELEPHONE CORD MANDREL END RETAINER

Richard H. Griffin, Riverside, R.I., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 8, 1974, Ser. No. 495,614
Int. Cl.² B29C *17/02*
U.S. Cl. 425—403 **11 Claims**

1. A fixture for holding a wound wire cord comprising:
a mandrel,
a wire cord wound around said mandrel,
a first wire cord end retainer secured at one end of said mandrel for holding one end of said wound cord,
a second wire cord end retainer slidably secured at the other end of said mandrel for holding the other end of said wound cord, the body of said second retainer including a bore accommodating said mandrel and an arm extending upwardly at an angle from one side of said retainer, said arm including bifurcated fingers extending from said arm and adapted to receive the other end of said wire cord, said one side including a ledge spaced from said fingers, the space between said ledge and fingers being adapted to



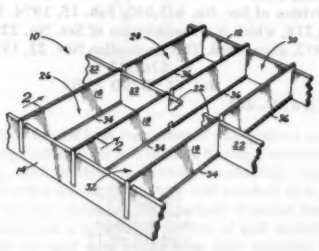
receive a strain relief member at said other end of said wire cord, and
means for detachably securing said second retainer at said other end of said mandrel.

3,940,229

APPARATUS FOR MANUFACTURING ROUGH FACED BRICKS

John R. Hutton, Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.

Filed Feb. 22, 1974, Ser. No. 445,312
Int. Cl.² B28B *3/06*, *11/08*, *13/05*
U.S. Cl. 425—436 R **7 Claims**



1. Apparatus for manufacturing a brick having a roughened side surface, said apparatus comprising a mold including a plurality of interconnected side plates defining a cavity therebetween having substantially the shape of a brick to be formed and adapted to receive material for molding into brick shape, said side plates having a set of edge margins defining an opening therebetween through which a formed uncured brick may be discharged from the mold, one of said side plates having an elongate lip rigidly secured thereon adjacent said opening, said lip extending substantially parallel to said edge margin of the plate and projecting substantially normally into the path along which a side of a brick moves on being discharged from said mold operable to tear a portion of the material forming said brick from the surface of the brick as it is discharged from the mold to produce an irregularly roughened surface for said brick.

3,940,230

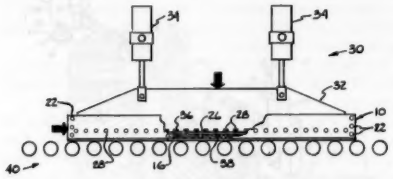
APPARATUS FOR MOLDING A PARTICLE BOARD

Edward Potter, Beaverton, Oreg., assignor to Edward Potter, Beaverton and Dant & Russell, Inc., Portland, both of, Oreg., part interest to each

Division of Ser. No. 359,687, May 14, 1973, which is a division of Ser. No. 297,999, Oct. 16, 1972, Pat. No. 3,804,935. This application Apr. 9, 1975, Ser. No. 566,296

Int. Cl.² B29J 5/08

U.S. Cl. 425—451.9 13 Claims



1. A mold for forming a highly densified particle board product of substantial thickness from a mixture of comminuted lignocellulosic material and binder, comprising:

a. an elongate container having spaced, opposing side walls and a base which define a hollow interior, the top of said container being open;

b. an elongate pressure member wholly insertable within said hollow interior of said container through the top thereof; and

c. lock means for fastening said pressure member to said container in a position wholly within said container so as to retain said pressure member in said wholly inserted position, said lock means being positioned intermediate the ends of said elongate container.

3,940,231

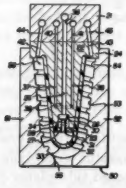
APPARATUS FOR MAKING BLOWN PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 443,092, Feb. 15, 1974, Pat. No. 3,882,218, which is a continuation of Ser. No. 225,448, Feb. 11, 1972, abandoned. This application Nov. 22, 1974, Ser. No. 526,327

Int. Cl.² B29D 23/03

U.S. Cl. 425—445 6 Claims



1. In an apparatus for making a blown plastic article by inflating interiorly of a blow mold a blowable pre-form of thermoplastic material having distendible side walls and a closed end wall, the improvements of a conditioning apparatus for ensuring the attainment of a desired orientation temperature of the pre-form prior to blowing of the pre-form to its final shape and including separable opposed chamber sections closeable in sealing relation upon the pre-form, said chamber sections cooperably defining an interior chamber having walls spaced substantially uniformly from the walls of the pre-form and having a closed end wall, and means for introducing a heat exchange fluid into the space intermediate the pre-form and the interior chamber walls, the fluid flowing into and through said space being in intimate surface contact with the side walls and the closed end wall of the pre-form.

3,940,232

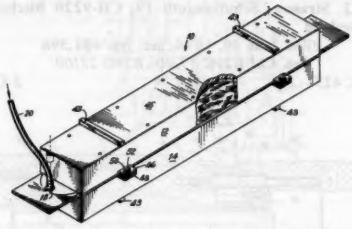
APPARATUS FOR MAKING ICE CUBES OR THE LIKE

Malcolm D. Stock, 93 Douglas Road, Staten Island, N.Y. 10304

Filed Apr. 1, 1974, Ser. No. 456,639

Int. Cl.² A01J 25/12

U.S. Cl. 425—447 3 Claims



3. A system for freezing a liquid into a plurality of readily separable forms comprising:

a. mold means having a plurality of separate cavities, each cavity including a base wall and a plurality of side walls extending from said base wall;

b. passageway means interconnecting adjacent cavities;

c. a pliable package means to sealingly contain the liquid to be frozen, said mold means adapted to receive said pliable package means in its unfilled condition; and

d. one way valve means for introducing the liquid to be frozen into said pliable package means after said pliable package means has been positioned in said mold means whereby said pliable package means with said liquid therein expands precisely against said base wall and said side walls and said passageway means so that said pliable package means containing said liquid substantially conforms to the volume of said cavities and said passageway means;

e. a reservoir for containing the liquid to be frozen;

f. means adapted to be connected to a source of liquid for filling said reservoir; and

g. conduit means in fluid communication with the interior of said reservoir and adapted to be placed in fluid communication with said one way valve means for introducing the liquid into said pliable package means.

3,940,233

CANDLE WICKING

Richard C. Fox, San Rafael, and Thornton K. Jones, Greenbrae, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 19, 1974, Ser. No. 534,521

Int. Cl.² F23D 3/18

U.S. Cl. 431—325 7 Claims

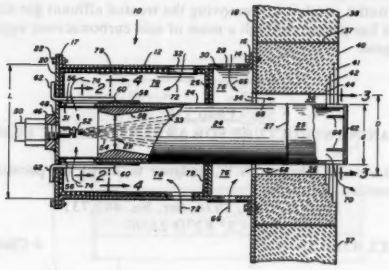
1. A stiffened candle wick composition for use in a wax candle comprising a combustible wick and a stiffening agent comprising a substantially wax-insoluble polymer or copolymer having a Vicat softening point at least 2.5°C. higher than the melting point of the wax of said candle and which depolymerizes or pyrolyzes to substantially completely combustible products at a temperature above said softening point and not greater than the temperature of the flame of said candle when said candle is burned.

3,940,234

NOISELESS PMS BURNER

Robert D. Reed; John Smith Zink, and Hershel E. Goodnight, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed May 28, 1974, Ser. No. 473,356
Int. Cl.² F23D 13/12
U.S. Cl. 431—348 5 Claims



1. A quiet premix gaseous fuel burner assembly comprising:

a. a cylindrical housing means of diameter L having a first end supported against an outside wall of a furnace, said wall having a tile lined opening of diameter D, where D is less than L, along the axis of said housing, the second end of said housing closed by a mounting plate;

b. a gaseous fuel line with nozzle passing through said mounting plate along the axis of said housing, the pressureized gas flowing from said nozzle in an expanding cone of high velocity gas;

c. a burner pipe of diameter d, where d is less than D mounted at its second end to said mounting plate coaxially with said housing and extending at least to an inside wall of said furnace, primary air openings in said burner pipe at its second end and means to control the area of said openings, a closure over the first end of said burner tube, and a plurality of longitudinal slots distributed circumferentially around said pipe at said first end;

d. an annular plate in said housing closing off the annular space between said tube and said housing, forming a first plenum space between said plate and said furnace wall and a second plenum space between said annular plate and said mounting plate;

e. a plurality of secondary air openings into said first plenum and means to vary the area of said secondary air openings, said openings adapted to pass secondary air into said first plenum and into the annular space between said burner pipe and said tile; and

f. a plurality of air openings on the wall of said housing adjacent said annular plate to convey air into said second plenum thence into said primary air openings.

3,940,235

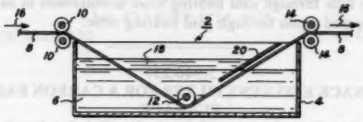
IMMERSION FUSING

Ernest A. Weiler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1974, Ser. No. 500,411
Int. Cl.² F26B 13/00; B05C 3/00
U.S. Cl. 432—8 3 Claims

3. A method of fixing a heat fusible particulate material to a support material to which it has been applied in imagewise configuration, and of coating said support material said configuration of particulate material with a nonmetallic plasticizer, including:

moving said support material into a molten bath of metal and nonmetal plasticizer in which said nonmetal plasticizer floats atop said metal in the area where said support material moves into said bath, the movement of said support material being in a direction so as to contact said plasticizer before said metal, said plasticizer forming a coating on said support material and forming a vapor and oxidation barrier over said molten metal, said molten bath of metal being sufficient in size and heat content to



effect a thermal fixing of said particulate material to said support material, and to effect a wringing of said coating of plasticizer,

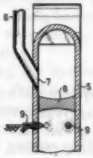
moving said support material out of said molten bath of metal in an area where floating plasticizer is not present.

3,940,236

METHODS AND APPARATUS FOR THE HEAT TREATMENT OF FINE-GRAINED MATERIALS

Paul Weber, Oelde; Hans Mollenkopf; Kurt Henning, both of Neubeckum; Otto Heinemann, Ennigerloh; Heinz-Herbert Schmits, Rheda; Wolfgang Rother, Stromberg; Horst Ritzmann, Enniger; Jurgen Wurr, Ennigerloh; Karl Krutzner, Jr., Neubeckum; Werner Schossler, Ahlen; Wolf Goldmann, and Georg Schepers, both of Ennigerloh, all of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed May 13, 1974, Ser. No. 469,358
Claims priority, application Germany, May 15, 1973, 2324565
Int. Cl.² F27B 15/12
U.S. Cl. 432—14 15 Claims



1. A method for the heat treatment of fine-grained material prior to firing said material in a furnace having a vertical waste gas conduit, said method comprising conducting waste gas from said furnace upwardly through said conduit at a predetermined velocity; supplying fine-grained material having a grain size such that a substantial portion of said material will be entrained by said gas; introducing said material downwardly into said conduit at a first level between its upper and lower ends so that said material will fall downwardly through said conduit toward the lower end thereof prior to said portion being entrained by said gas; distributing said material over the cross-sectional area of said conduit following the introduction of said material to said conduit; and combusting fuel in said conduit at a level below said first level to provide a heating zone through which said material passes as it falls toward said lower end of said conduit and through which said portion of said material again passed following its being entrained by said gas.

8. Apparatus for the heat treatment of fine-grained material prior to firing said material in a furnace, said apparatus comprising a conduit having a substantially vertical portion; inlet means for introducing material to said conduit at a first level such that said material may fall downwardly through said vertical portion; means for distributing said material over the cross-sectional area of said conduit as it falls downwardly; means for combusting fuel in said conduit at a second level

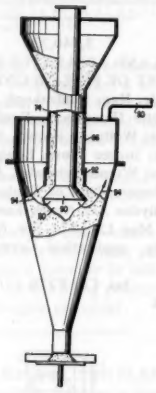
lower than said first level to provide at said second level a heating zone through which said material may fall; and means for delivering waste furnace gas to said conduit at a level below said heating zone and at such velocity with respect to the grain size of said material that at least part of the material which falls through said heating zone is entrained in said gas and passed again through said heating zone.

3,940,237

FURNACE EFFLUENT FILTER FOR A CARBON BAKING FURNACE

Juan M. Gonzalez, and William V. Nichols, Jr., both of Portland, Oreg., assignors to Reynolds Metals Company, Richmond, Va.

Filed Dec. 13, 1974, Ser. No. 532,740
Int. Cl.[2] F23J *15/00*
U.S. Cl. 432—72 15 Claims



1. In a carbon baking system having a furnace, and means for mixing carbonaceous aggregate with a suitable binder and forming the mixture into green carbon bodies for baking in said furnace at elevated temperature, the improvement comprising a filter unit for treating the furnace effluent using a bed of carbonaceous aggregate as the filter medium, with provision to recover the used carbonaceous filter material from said filter unit in a form suitable for making such green carbon bodies, said furnace effluent filter including:
- a vertically arrayed funnel-shaped housing through which said carbonaceous aggregate moves under the force of gravity;
- means for supplying the carbonaceous aggregate to maintain a bed thereof within said funnel-shaped housing;
- means located at the base of said funnel-shaped housing for controlling the withdrawal of carbonaceous aggregate from said funnel-shaped housing;
- an effluent entrance conduit vertically mounted in said funnel-shaped housing for directing the effluent generated by said furnace into the bed of carbonaceous aggregate located in said funnel-shaped housing; and,
- an outlet conduit for discharging the treated effleunt gas to atmosphere after it has passed through a mass of said carbonaceous aggregate.

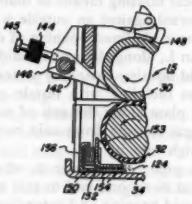
10. A carbon baking furnace and associated filter system for treating furnace effluent using carbonaceous aggregate as a filter medium, said filter system comprising:
- a vertically arrayed funnel-shaped housing through which said carbonaceous aggregate moves under the force of gravity, the angle defined by the walls of said funnel-shaped housing being less than or equal to the angle of slide of said carbonaceous aggregate;
- means for supplying the carbonaceous aggregate to maintain a bed thereof within said funnel-shaped housing;
- a valve located at the base of said funnel-shaped housing for regulating the rate of withdrawal of carbonaceous aggregate from said funnel-shaped housing;
- an effluent entrance conduit for directing the effluent generated by said furnace downwardly within the bed of carbonaceous aggregate located in said funnel-shaped housing; and,
- an outlet conduit for removing the treated effluent gas after it has passed through a mass of said carbonaceous aggregate.

3,940,238

CLEANING STRUCTURE FOR AN ELASTOMERIC FUSER MEMBER

Ari Bar-on, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 24, 1974, Ser. No. 482,731
Int. Cl.[2] F27D *23/00*
U.S. Cl. 432—75 4 Claims



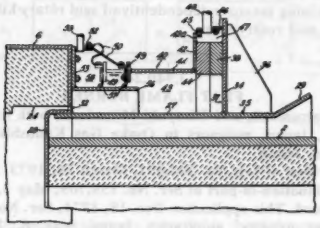
1. Contact fuser apparatus for fixing toner images to support sheets, said apparatus comprising:
- a heated fuser member;
- a resilient backup member;
- means including a support base for supporting said members such that they cooperate to move support sheets therebetween with said toner images contacting said heated fuser member, said backup member being disposed adjacent said base;
- means for cleaning toner from said backup member including a smooth surfaced member having a substantially planar portion positioned for contacting said backup member intermediate the ends of planar portion and forming a nip therebetween, the exit of said nip being disposed opposite said support base whereby toner particles accumulating at the exit of said nip fall upon said support base; said cleaning means comprising a triangular-shaped member and an angular support therefor wherein two sides of said triangular-shaped member are in intimate contact with the two sides of said angular support while said planar portion is unsupported thereby, said planar portion being the third side of said triangular member;
- means for movably supporting said cleaning means; and
- means for biasing said cleaning means into its operative position in engagement with said backup roll, said biasing means comprising a spring contacting one side of said triangular member for urging the triangular member in a first direction and said bias means further comprising said backup member for urging said triangular member in a second direction substantially perpendicular to said first direction.

3,940,239

ROTARY REDUCING KILN SEAL

Eugene F. Rossi, Milwaukee, and Daryl R. Konzal, Colgate, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 16, 1974, Ser. No. 533,321
Int. Cl.[2] F27B 7/24; F26B 25/00
U.S. Cl. 432—115 3 Claims



1. In a generally horizontal rotary mineral reducing kiln having a stationary hood surrounding one end of the kiln, a sealing assembly for preventing the passage of gas through an annular clearance space between the hood and the kiln, the sealing assembly comprising:

a. an annular flange secured to and extending radially outward from the kiln and axially spaced from the hood;

b. a first annular seal ring secured concentrically on the flange to rotate with the flange and the kiln;

c. an axially movable assembly comprising a cylinder spaced around the kiln between the hood and the first seal ring, a second annular seal ring concentrically connected to an end of the movable cylinder for engagement with the first seal ring, wall means connected to the movable cylinder are arranged with a portion thereof radially outward of the seal rings for cooperating with the annular flange on the kiln to define an annular chamber encompassing the first and second seal rings, and gas delivery means connected to the annular chamber for introducing pressurized purge gas into the annular chamber to prevent leakage of other gas between the first and second seal rings;

d. an annular flexible diaphragm spaced around the kiln with an axial end thereof adjacent the cylinder of the floating assembly being circumferentially connected thereto in gas sealing relation, and an opposite end adjacent the hood being circumferentially connected to the hood in gas sealing relation;

e. means engaging the movable assembly and biased to push the movable assembly toward the annular flange on the kiln and maintain the second seal ring in engagement with the first seal ring; whereby upon thermal expansion of the kiln the flange and first seal ring will push the movable assembly to fold the flexible diaphragm, upon contraction of the kiln the biased means will push the movable assembly to expand the flexible diaphragm and toward the first seal ring, and with an effective seal being thereby maintained under variable operating conditions;

f. a cylindrical guide member which is circumferentially connected to the hood substantially concentric to the kiln and projects at least in part into an annular space between the outer periphery of the kiln and the inner periphery of the cylinder of the movable assembly; and

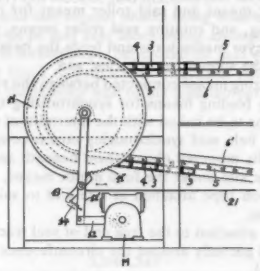
g. an annular flexible wiper which is circumferentially connected to the movable cylinder and projects radially inward thereof into engagement with the other periphery of the cylindrical guide member to shield the flexible diaphragm from high temperature gases within the kiln.

3,940,240

BAKING METHOD AND KILN FOR TILE

Muneo Noritake, and Masaharu Takeuchi, both of Aichi, Japan, assignors to INA Seito Co., Ltd., Tokoname, Aichi, Japan

Filed July 11, 1974, Ser. No. 487,804
Int. Cl.[2] F27B 9/14, 9/26
U.S. Cl. 432—122 3 Claims



1. A method for baking tiles or the like in a baking apparatus which bakes the tiles in an upright position, said baking apparatus having:

a tunnel kiln,

an endless chain through the tunnel kiln which has L-shaped supporting receptacles attached thereto for supporting the items to be baked in an upright position as they pass through the kiln on the endless chain, said chain being supported and moved by gear wheels at the entrance of the kiln, and by sprockets at the exit from the kiln moved by a motive wheel, and

a feeding means at the entrance to the kiln with an inclined feeding conveyor which conveys the items to be baked into the L-shaped receptacles,

said method comprising:

intermittently rotating the motive wheel by driving means positioned outside the kiln, thereby causing the endless chain to move intermittently;

intermittently conveying and loading the items to be baked onto the long back portion of the L-shaped receptacles on the endless chain by the intermittent rotation of the feeding conveyor in response to the intermittent rotation and stopping of the endless chain at the front of the kiln;

passing the items to be baked through the kiln in an upright position at a speed of approximately 4 meters per hour.

2. In a baking apparatus for baking tiles or the like in an upright position, said baking apparatus having a tunnel kiln, and an endless chain through the tunnel kiln which has L-shaped supporting receptacles attached thereto for supporting the items to be baked in an upright position as they pass through the kiln on the endless chain, the improvements comprising:

rotating means for rotating said endless chain through the kiln, said rotating means comprised of:

a notched wheel operatively connected to said endless chain at the exit from the kiln,

a motor having an eccentric axis positioned at the exit from and beneath said kiln,

crank shaft means connected at one end to said motor for movement therewith, and

a sending nail rotatably attached at middle portion thereof to said crank shaft means, the lower portion of said nail having a continuous downward moment and the upper portion of said nail being engageable with said notched wheel, whereby in response to the rotation of the motor, the crank shaft moves and causes the sending nail engaged with said notched wheel to rotate said wheel, thereby causing said endless chain to rotate;

feeding means at the entrance of the kiln for feeding the items to be baked into the support receptacles of the endless chains, said feeding means comprised of:

inclined conveyor means spaced from the support receptacles at the entrance of the kiln for conveying the items to be baked in the kiln into the support receptacles,

roller means operatively attached to said conveyor means for turning said conveyor means, and

feed motor means pivotally mounted beneath said conveyor means and said roller means for pivoting, contacting, and rotating said roller means, whereby said conveyor means turns and feeds the items to be baked into the support receptacles; and

synchronizing means connected between the rotating means and the feeding means for synchronizing the feeding of the items to be baked with the intermittent motion of the endless belt, said synchronizing means comprised of:

an axially mounted chain wheel beneath and at the front of the kiln under the feed motor means,

a traction rope attached at one end to said crank shaft means,

a chain attached to the free end of said traction rope and fitted partially around the circumference of said chain wheel,

a weight attached to the free end of said chain fitted around said chain wheel,

a cam coaxially mounted with said chain wheel for rotation as the chain wheel rotates,

a moving rod resting against the circumference of said cam at one end and attached to said feed motor means at the other end, whereby movement of the crank shaft causing the intermittent movement of the endless chain causes the traction rope and chain attached thereto to move in the direction of the crank shaft, thus causing the chain wheel and its coaxially mounted cam to rotate against the moving rod and pivot the feed motor means attached thereto upward against the roller means, thereby turning the conveyor means and feeding the items to be baked into the support receptacles on the endless chain.

3,940,241

ROTARY KILN PLANT

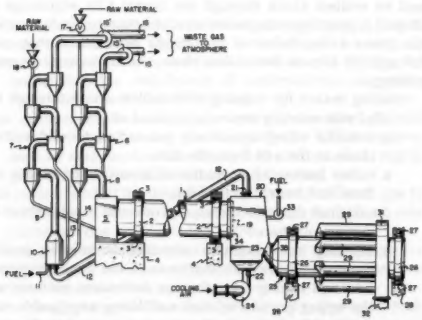
Rolf Dietrich Houd, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Jan. 17, 1975, Ser. No. 541,993

Claims priority, application United Kingdom, Jan. 25, 1974, 3608/74

Int. Cl.² F27B 7/02, 15/16

U.S. Cl. 432—106 **33 Claims**



1. A rotary kiln plant for calcining and sintering mineral materials such as cement raw materials which comprises separate means for preheating and calcining the raw materials, a rotary kiln for burning the raw materials and a rotary cooler means for cooling the materials burnt in the rotary kiln, a stationary chamber positioned intermediate the outlet portion of the rotary kiln and the inlet portion of the rotary cooler means in a manner to form a passage for the burnt kiln product from said kiln to said rotary cooler means in countercurrent with heated cooling air passing to said rotary kiln for use as combustion air, inlet means on said intermediate chamber for the admission of additional cooling air into said chamber, and outlet means on said intermediate chamber for discharging at least part of the preheated cooling air therefrom, said chamber outlet means communicating with said preheating and calcining means independently of said rotary kiln so as to by-pass said rotary kiln.

3,940,242

FLAT FLAME BURNER

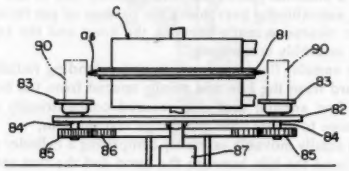
Yuji Matsumura, and Hiroyuki Mitsudomi, both of Nishinomiya, Japan, assignors to Osaka Gas Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 344,891, March 26, 1973, and a continuation-in-part of Ser. No. 139,709, May 3, 1971, abandoned. This application Dec. 18, 1974, Ser. No. 534,068

Claims priority, application Japan, May 6, 1970, 45-44377[U]; May 9, 1970, 45-45101[U]; Oct. 30, 1970, 45-108339[U]

Int. Cl.² F27B 9/14

U.S. Cl. 432—124 **3 Claims**



1. A burner comprising a housing provided with a first perforated planar exterior wall, an axially apertured plate means disposed in spaced relation thereto, said axially apertured plate means serving to form one wall of a supplemental housing which further includes combustion air and gaseous fuel supply means, a rotary turntable means associated with said supplemental housing adapted to support a circumferentially disposed series of work holding means, each of said work holding means having a perpendicular axis and capable of supporting an article, means defining a second opening in the housing in axial alignment with the perforation in said wall, gas conduit means having an inner terminal portion coaxial with the said second opening in the housing, said conduit further including plural cutlets spaced from the terminus, inlet means to introduce continuously swirling combustion air into said housing exteriorly of said gas inlet conduit and flame control means embodied with the first perforate wall to form a flame having a predetermined characteristic.

3,940,243

SEMICONDUCTOR WAFER BAKING AND HANDLING SYSTEM

Anthony L. Adams, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 9, 1974, Ser. No. 504,580

Int. Cl.² F27B 9/00

U.S. Cl. 432—144 **16 Claims**

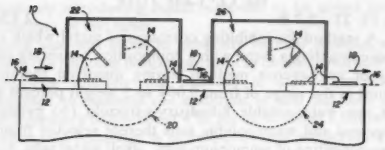
1. A semiconductor wafer handling system comprising:

means for advancing semiconductor wafers along a predetermined path of travel including incoming and outgoing portions;

wheel means including a plurality of radially extending slot means each for receiving and supporting a semiconductor wafer;

means supporting the wheel means for rotation about an axis lying substantially in the plane of and extending substantially perpendicularly to the predetermined path of semiconductor wafer travel;

means for rotating the wheel means about the axis to sequentially align the slot means with the incoming portion of the path of semiconductor wafer travel so that the



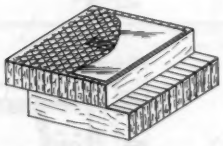
semiconductor wafers are received in the slot means from the incoming portion of the path to rotate received semiconductor wafers through a predetermined arc, and to subsequently sequentially align each slot means with the outgoing portion of the path of semiconductor wafer travel so that semiconductor wafers are removed from the slot means for travel along the outgoing portion of the path.

3,940,244

CERAMIC FIBER INSULATION MODULE

Robert A. Sauder; Gary R. Kendrick, and Dale Rich, all of Emporia, Kans., assignors to Sauder Industries, Inc., Emporia, Kans.

Filed Sept. 19, 1974, Ser. No. 507,484
Int. Cl.² F27D *1/00*
U.S. Cl. 432—247 **7 Claims**



1. An insulation module for lining an interior wall of a high temperature chamber comprising:

a first block of high temperature insulating material, said first block comprising:

a relatively cold face for positioning adjacent the interior wall of the high temperature chamber, and

a relatively hot face, opposite said cold face, for exposure to a relatively cold face of a second black of high temperature insulating material; and

a second block of high temperature insulating material, said second block comprising:

a relatively cold face for positioning adjacent said relatively hot face of said first block, and

a relatively hot face, opposite said cold face of said second block, for exposure to chamber heat;

said first and said second blocks each comprising:

a plurality of strips of resilient fiber insulation positioned adjacent each other in side-by-side relation, the fibers of said resilient strips being arranged in planes substantially perpendicular to the plane of said respective relatively hot faces of said first and said second blocks;

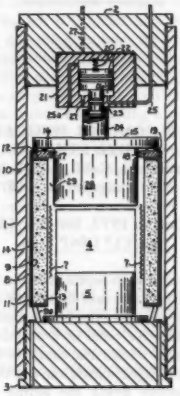
said first and said second blocks being attached together, said strips of said first block being arranged to face in a lateral direction perpendicular to said strips of said second block to provide an insulation module attachable to the interior wall of the high temperature chamber.

3,940,245

CONVECTION SHIELD FOR ISOSTATIC BONDING APPARATUS

Charles W. Smith, Jr., Fairview, and Franz Zimmerman, Erie, both of Pa., assignors to Autoclave Engineers, Inc., Erie, Pa.

Filed Dec. 18, 1974, Ser. No. 533,828
Int. Cl.² F27D *23/00*
U.S. Cl. 432—249 **10 Claims**



2. A furnace for isostatic pressing, diffusion bonding and the like comprising

a pressure vessel having means for holding gas at high pressure, said vessel having tubular side walls with a top closure and a bottom closure.

means for creating a hot zone in the upper part of the vessel and a cool zone in the lower part of the vessel,

a convection shield having an impervious tabular shell open at the top and bottom and spaced inward from the vessel side walls and surrounding the hot and cool zones and having its open top spaced below said top closure,

cover means for engaging and hermetically sealing the open top of the tubular shell and

a refractory cement cast on the interior of the shell for providing thermal insulation for the hot zone and for blocking mass flow of gas through the cement to the shell.

3,940,246

SUBLIMATION TRANSFER AND ISOCYANATE FIXATION OF AMINO- OR HYDROXY-CONTAINING DYESTUFFS AND TRANSFER SHEETS THEREFOR

Raymond DéFago, Riehen; Hans-Joerg Angliker, Basel; Herbert Holzrichter, Muri; Werner Kneubuehler, Binningen, and Richard Peter, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 245,648, April 19, 1972, Pat. No. 3,782,896. This application Sept. 19, 1973, Ser. No. 398,894
Claims priority, application Switzerland, Apr. 26, 1971, 6069/71
Int. Cl.² D06P 5/06
U.S. Cl. 8—2.5 A 25 Claims

1. A transfer printing process for the manufacture of prints on a textile or non-textile, hydrophobic sheet which prints are heat-fast and fast to wet processing, comprising the steps of

a. applying to an auxiliary carrier web a sublimable dyestuff containing a hydroxyl group, an amino group or both,

b. transferring said dyestuff to said sheet by heat-induced sublimation or diffusion from said auxiliary carrier web.

c. subsequently providing to the printed area of said sheet an isocyanate compound, having only one isocyanate group per molecule, and which is capable of reacting with said dyestuff and fixing the dyestuff to the printed area of said sheet by reaction therewith.

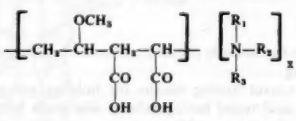
3,940,247

DYE MIGRATION CONTROL WITH AMINE SALT OF POLY(VINYL METHYL ETHER/MALEIC ACID)

Derwin Sthare, Yorbalinda, Calif., and Richard F. Chambers, Pompton Lakes, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,113
Int. Cl.² D06P 5/06
U.S. Cl. 8—172 R 11 Claims

1. In an aqueous dye bath liquid suitable for the impregnating of textile material with said dye, with subsequent drying prior to the fixing of said dye, the improvement comprising the incorporation in said dye bath of a polymeric antimigration additive in an amount within the range of from about 0.05% to about 0.50% by weight, based on the total weight of said dye bath, said additive being the amine salt of poly(vinyl methyl ether/maleic acid) having the unit structural formula:



where x is from 0.5 to 2.0, R_1, R_2 and R_3 each being taken from the group consisting of H, CH_3, CH_2CH_3, $CH(CH_3)_2$, $CH_2CH_2CH_3$, CH_2CH_2OH and $CH_2CHOHCH_3$, with the exception that R_1, R_2 and R_3 are not all H and that R_1 and R_2 together may be a divalent unit taken from the group consisting of $-(CH_2)_4-$ and $(-CH_2CH_2)_2O$, the presence of said additive serving to minimize uncontrolled dye migration to the surface of the dye-impregnated textile material during the drying of said material prior to fixing, thus enhancing the uniformity of the dyeing operation and the color properties of the dyed textile material.

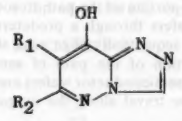
3,940,248

METHOD FOR INHIBITING CORROSION OF METAL

Hideo Yamaguchi, Naruto; Takashi Kawasaki, Tokushima; Shigeo Takahashi, Tokushima, and Akiyoshi Inubuse, Tokushima, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka, Japan

Filed June 13, 1973, Ser. No. 369,518
Claims priority, application Japan, June 15, 1972, 47-60172
Int. Cl.² C23F 11/14
U.S. Cl. 21—2.7 R 2 Claims

1. A method for inhibiting corrosion of metal which comprises contacting a metal with a composition consisting essentially of an aqueous medium having dissolved therein an amount in the range of from 0.001 to 5 weight percent of at least one water-soluble 8-hydroxy-s-triazolo (b) pyridazine compound and water-soluble salts thereof selected from the group consisting of ammonium salts, alkali metal salts, hydrazine salts and amine salts, said water-soluble 8-hydroxy-s-triazolo(b)-pyradazine compound having the formula of



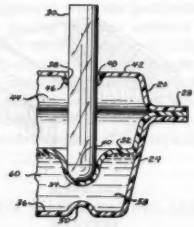
wherein R_1 is hydrogen atom or an alkyl group having 1 to 4 carbon atoms: R_2 is hydrogen atom, an alkyl having 1 to 10 carbon atoms, phenyl, hydroxyphenyl, nitrophenyl, benzyl, hydroxybenzyl or nitrobenzyl groun.

3,940,249

LABORATORY TESTING PROCEDURE

James E. McClurg, Omaha, Nebr., assignor to Streck Laboratories, Inc., Omaha, Nebr.

Continuation-in-part of Ser. No. 364,953, May 29, 1973, abandoned. This application June 17, 1974, Ser. No. 479,823
Int. Cl.² B01L 9/06; F25D 3/08; F28D 13/00
U.S. Cl. 23—230 R 1 Claim



1. A laboratory testing procedure for specimens under refrigeration comprising the steps of

providing a test tube holder apparatus which includes a container having a bottom, walls extending upwardly from said bottom, and a top secured to and extending across the upper ends of said walls, said top having a plurality of spaced apart supports integrally formed therein extending downwardly therefrom toward said bottom for removably supporting the bottom portions of test tubes therein, said container being substantially filled with a freezable liquid material comprising H_2O and a

material having colligative properties relative to H_2O, said container being equipped with a superstructure mounted a spaced distance above said top and equipped with an aperture aligned with each of said supports whereby a test tube is supported at two vertically spaced apart positions, said superstructure including a unitary member having a top panel with depending sidewalls, said sidewalls being connected to the perimeter of said container, said superstructure being positioned above said top a distance to support a test tube at at least one-quarter of the test tube height,

selectively introducing liquid materials to be tested into a plurality of test tubes,

placing said test tubes in generally vertical position with only the test tube bottom portions in contact with said top supports whereby the material in said container is adapted to maintain the materials in said test tube at a temperature below about 4°C. for up to about 8 hours and while said apparatus is in ambient room temperature,

maintaining said portions in heat transfer contact with said top,

thereafter selectively withdrawing said test tubes from said contact for further testing, and

analytically testing the contents of said test tubes.

3,940,250

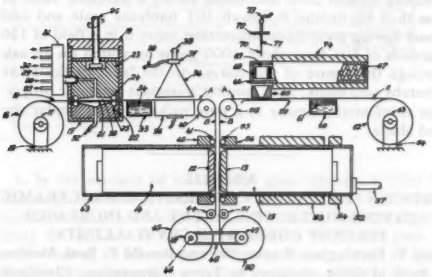
TESTING USING LUMINESCENT REACTION

Chris J. Plakas, Washington, D.C., and George S. Glaros, Perama-Piraeus, Greece, assignors to Vitatect Corporation, Alexandria, Va.

Continuation of Ser. No. 222,256, Jan. 31, 1972, abandoned. This application May 21, 1974, Ser. No. 471,854

Int. Cl.² C12K *1/10*; G01N *33/16*; G21H *5/00*

U.S. Cl. 23—230 B **13 Claims**



1. A method of optically detecting the presence of biological cells as reactive materials in a sample containing a plurality of biological cells comprising the steps of:

A. filtrating said sample on a light-transmitting filter to produce a filtrate containing biological cells from the sample,

B. rupturing the cells in the residue while on said filter,

C. depositing a reagent on a light-transmitting surface,

D. bringing said surface and said filter into contact for luminescent reaction, and

E. detecting said luminescence as an indication of said biological cells as reactive materials present in said sample.

3,940,251

APPARATUS FOR DETECTING OR MEASURING A CONSTITUENT OF A GAS

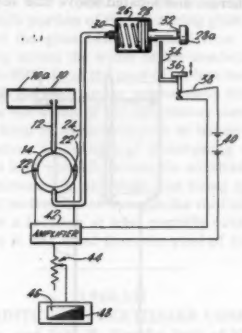
Thomas Parry Jones, 20 South Rd., Sully, Glamorgan, Wales, and Basil Martin Wright, Scots Hill House, Croxley Green, Rickmansworth, Herts, England

Filed Sept. 24, 1973, Ser. No. 399,944

Claims priority, application United Kingdom, Sept. 26, 1972, 44506/72

Int. Cl.² G01N *27/52*, *33/16*

U.S. Cl. 23—254 E **9 Claims**



1. Apparatus for detecting alcohol vapour in a gas and particularly for detecting alcohol vapour in exhaled breath, comprising a fuel cell, said fuel cell having inlet means for interposition in an intermediate position of a low resistance path along which breath is exhaled, said low resistance path comprising a tube including an inlet for receiving said gas, a first outlet for detachable connection to the inlet means and a vent port for venting at least some of the gas to atmosphere, means serially communicating with said inlet means through said fuel cell and actuable for drawing a predetermined sample volume of gas from the exhaled breath stream into said fuel cell, said fuel cell further including means for providing an electrical output signal dependent upon the amount of alcohol vapour in the gas sample, and measuring means coupled to the sensor output for measuring the magnitude of said electrical output signal.

3,940,252

APPARATUS FOR THE RELEASING OF MATERIALS FROM VOLUMINOUS PRECIPITATES OR SUSPENSIONS

Helmut Reinhardt, Rodenkirchen; Karl Trebinger, and Gottfried Kallrath, both of Wesseling, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, DT

Division of Ser. No. 343,170, March 20, 1973, Pat. No. 3,867,197. This application July 12, 1974, Ser. No. 488,152

Claims priority, application Germany, Mar. 27, 1972, 2214826

Int. Cl.² B01D *12/00*

U.S. Cl. 23—270 R **3 Claims**

1. Apparatus for removing solvent soluble material from a voluminous suspension of solid material by countercurrent flow comprising

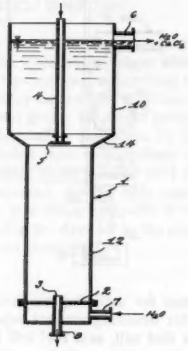
a vertical column having a vertical cylindrical upper wide portion, a vertical cylindrical lower narrow portion, and a frustoconical portion interconnecting said upper and lower portions, the cross-sectional area of said upper portion being approximately twice that of the lower portion,

first conduit means for introducing said suspension into said column extending from above and through said upper portion and terminating near the bottom of said frustoconical portion,

dispersing means comprising a horizontal spray diffuser for providing a uniform distribution of the suspension over the entire cross-sectional area of said column lower portion, terminating said first conduit means at the beginning of said lower column portion,

second conduit means disposed near the bottom of said column for introducing said solvent,

means for evenly distributing said solvent introduced near said column bottom over the entire cross-sectional area of said column lower portion, said means including a horizontally disposed perforate member having a top portion thereof and located above said second conduit,



means for discharging purified suspension from said column, said means including a single discharge conduit extending from slightly above the top of said horizontally disposed member through said member to below the second conduit, and

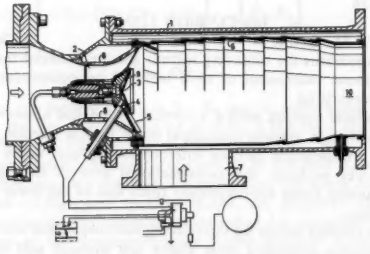
means for removing solvent containing solubles released from the voluminous suspension, said means including a discharge device disposed in the top of said column upper portion and above the bottom termination of said first conduit means.

3,940,253

DEVICE FOR THE PURIFICATION OF PROCESS WASTE GASES

Karl Axel Zetterstrom, Trollhattan, Sweden, assignor to Volvo Flygmotor Aktiebolag, Trollhattan, Sweden

Filed Dec. 7, 1973, Ser. No. 423,371
Int. Cl.² F23G *7/06*
U.S. Cl. 23—277 C **3 Claims**



1. Apparatus for the purification by combustion of waste gases emanating from chemical processes and the like and having poisonous, odious and/or other noxious and/or corrosive constituents comprising:

an elongate outer casing,

an inner flame tube disposed within but spaced from said outer casing and providing an inner surface which is exposed to the combustion of the waste gases occurring in said flame tube,

means for admitting air into the space between said flame tube and said outer casing,

means comprising a multiplicity of through slots in said inner flame tube spaced about the periphery of said flame tube and along its length for permitting the flow of air from said space into said flame tube to flow as a thin film of air over the inner surface of said air tube,

means for burning a fuel at said inlet end of said flame tube,

means for spreading the flame from the burning fuel over the entire cross-sectional area of said flame tube,

and means for admitting the gases to be purified into an inlet end of said flame tube and for passing said gases through the flame of the burning fuel,

the purified gases following combustion in said flame tube exiting at the other end of said flame tube.

3,940,254

NICKEL CLAD STEEL COINAGE BLANK

Arthur G. McMullen, Edmonton; Michael J. H. Ruscoe, St. Albert; Maurice A. Clegg, and Ronald L. Prowse, both of Fort Saskatchewan, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Oct. 21, 1974, Ser. No. 516,248
Claims priority, application Canada, Sept. 16, 1974, 209325
Int. Cl.² B32B *15/18*
U.S. Cl. 29—196.6 **3 Claims**

1. A coin blank comprising a core formed of low carbon steel having a carbon content below about 0.03 wt. %, a continuous cladding of nickel completely encasing said core, said cladding having a thickness of at least 0.05 mm on each of the opposed faces of the blank and a thickness, measured radially, of 2 to 4 times the face thickness at the edge thereof, a layer of interdiffused nickel and iron metallurgically bonding said cladding to said core, said blank having a hardness value of less than 65 on the Rockwell 30T hardness scale and said blank having an induced magnetism value B in a field of 150 oersteds of less than about 4000 gauss measured on an axis through the centre of and normal to the faces of the blank whereby said blank, after minting, possesses magnetic properties substantially similar to a pure nickel coin of similar size and shape.

3,940,255

PROCESS FOR MAKING CORDIERITE GLASS-CERAMIC HAVING NUCLEATING AGENT AND INCREASED PERCENT CORDIERITE CRYSTALLINITY

Roy V. Harrington, Brecksville, and Donald F. Beal, Medina, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Aug. 5, 1974, Ser. No. 494,737
Int. Cl.² C03C *3/22*
U.S. Cl. 65—33 **8 Claims**

1. In a process for producing a cordierite glassceramic by fusing a mixture of ingredients to form a melt consisting essentially of MgO, Al_2O_3, and SiO_2, quenching the melt to a solid glass, and then heating the solid glass to crystallize such oxides to a cordierite crystalline structure in the presence of a glassy phase; the improvement of increasing the amount of cordierite crystalline structure formed and reducing the amount of glassy phase obtained, comprising: admixing with said mixture or glass at any time prior to such heating step a nucleating agent in a relatively small amount of about 0.5% to about 3%, based on the weight of said solid glass, said agent consisting essentially of a metal compound, the metal of said compound being selected from a class consisting of Mo, Ta, Zr, Nb, Ti, Li, As and mixtures thereof, and said compound of the metal being

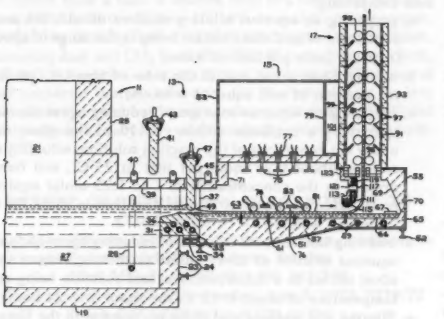
selected from the class consisting of the metal itself, an oxide of the metal, a compound convertible to the oxide by heat, and lithium fluoride, comminuting said solid glass to an average particle size no greater than about minus 325 U.S. Standard sieve to provide substantially increased surface area, heating said particles and nucleating agent to a nucleating temperature and forming a plurality of sites for crystallization of said comminuted glass to a cordierite glass-ceramic by the combination of said relatively small amount of nucleating agent and said increased surface area, and then heating the particles and agent at a higher temperature to promote crystallization and form a cordierite glass-ceramic containing at least 80% by weight of a cordierite crystalline structure corresponding to $2MgO.2Al_2O_3.nSiO_2$, n being a whole number within the range of 5 to 8, said glass-ceramic having a coefficient of thermal expansion less than 1.60×10^{-6} inch/inch/°C from room temperature to 600°C as determined by the Orton dilatometer.

3,940,256

APPARATUS AND METHOD FOR CONTROLLING THE FLATNESS OF A NEWLY-FORMED CONTINUOUS SHEET OF FLAT GLASS

Joseph A. Gulotta, New Kensington; Leonard A. Knavish, Plum Borough, and John E. Sensi, Arnold, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 15, 1974, Ser. No. 514,977
Int. Cl.² C03B *18/02*
U.S. Cl. 65—65 A **13 Claims**



1. In the method of making flat glass wherein a layer of molten glass is delivered onto the surface of a pool of molten metal, the glass is advanced in a substantially horizontal path along the surface of the pool of molten metal, the glass is cooled during its advance to form a continuous sheet of glass and the continuous sheet of glass is lifted upwardly along a curved path from the pool of molten metal and then conveyed substantially vertically upwardly along a substantially vertical path away from the pool of molten metal; the improvement of

adjusting and maintaining the temperature in each of a plurality of discrete portions of the sheet of glass to be within 20°F. (10°C.) of the temperature of each other discrete portion of the advancing glass, the discrete portion of the glass being disposed from one another transversely across the width of the continuous sheet of glass as it is lifted from the pool of molten metal along the curved path such that its curvature is substantially uniform across all of its width as the continuous sheet of glass is lifted from its horizontal path of advance to its vertical path of conveyance.

8. In an apparatus for making flat glass comprising a forming chamber having a bottom, sidewalls, a roof, an inlet end and an outlet end and containing a pool of molten metal, means for delivering a layer of molten glass onto the surface of the pool of molten metal at the inlet end of the forming chamber, means for advancing the glass substantially horizontally along the surface of the pool of molten metal in a path extending from the inlet end of the forming chamber toward the outlet end thereof, means for cooling the glass during its advance to form a continuous sheet of glass, means for lifting the continuous sheet of glass upwardly along a curved path from the pool of molten metal and for conveying it substantially vertically upwardly therefrom; the improvement of

means for adjusting and maintaining the temperature in each of a plurality of discrete portions of the sheet of glass to be within 20°F. (10°C.) of the temperature of each other discrete portion of the advancing glass, the discrete portions of the glass being disposed from one another transversely across the width of the continuous sheet of glass as it is lifted from the pool of molten metal along the curved path for maintaining substantially uniform curvature across the width of the continuous sheet of glass as it is lifted from its horizontal path to its vertical path,

said temperature adjusting and maintaining means being disposed at least partially across the width of the forming chamber between its sidewalls and being spaced above the pool of molten metal beneath the roof of the forming chamber at a location at least partially overlying that at which glass is first lifted from the pool of molten metal.

3,940,257

SOIL CONDITIONING FERTILIZER COMPOUND

Ian M. Sherwin, and John R. Grubbe, both of Victoria, Canada, assignors to American Forest Industries Ltd., Victoria, Canada

Continuation-in-part of Ser. No. 688,023, Dec. 5, 1967, abandoned. This application Sept. 23, 1970, Ser. No. 74,867
Int. Cl.² C05F *11/00, 11/02*
U.S. Cl. 71—23 **2 Claims**

1. The method of combining particulate raw seaweed and particulate tree bark to produce a soil conditioning and fertilizing composition comprising;

providing particulate raw seaweed,

providing particulate tree bark,

mixing the particulate seaweed and tree bark in a weight ratio of 10 parts tree bark to no more than about 1 part seaweed to assure uniform distribution of the seaweed throughout the bark, and

pulverizing the mixture to reduce the composition to particulate form and to cause the juices of the seaweed to wet the fibers of the tree bark.

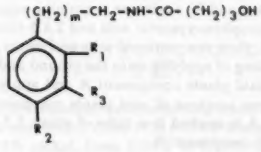
3,940,258

METHOD FOR CONTROLLING AQUATIC WEEDS WITH N-PHENYLALKYL-γ-HYDROXYBUTYRAMIDE

Joseph P. Copes, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 202,595, Nov. 26, 1971, abandoned. This application Jan. 23, 1974, Ser. No. 435,935
Int. Cl.² A01N *9/00*
U.S. Cl. 71—66 **9 Claims**

1. The method of controlling the growth of aquatic weeds which comprises applying to the site where said growth is to be controlled, an effective amount of an herbicidal composition comprising as the active component, an N-phenylakyl-2-hydroxybutyramide having the following formula:



wherein m is 1 or 0; at least one of R_1 and R_3 is hydrogen and the other is hydrogen, methyl, chlorine or bromine, and R_2 is hydrogen, methyl, chlorine or bromine.

3,940,259

DIOXANE SUBSTITUTED-α-HALOANILIDES AS HERBICIDES

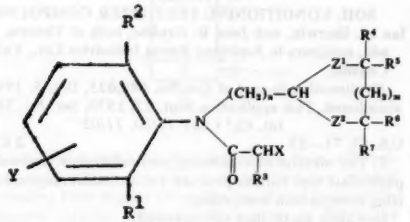
Sidney B. Richter, Chicago, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 357,746, May 7, 1973, Pat. No. 3,859,308. This application June 3, 1974, Ser. No. 475,461

Int. Cl.² A01N 9/00

U.S. Cl. 71—88 8 Claims

1. A herbicidal composition comprising an inert carrier and, as the essential active ingredient, in a quantity toxic to weeds, a compound of the formula



wherein Y is selected from the group consisting of hydrogen, lower alkyl and halogen; R^1 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; R^2 is lower alkyl; R^3, R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen and lower alkyl; X is halogen; m is the integer 1; Z^1 and Z^2 are oxygen; and n is an integer from 1 to 2.

3,940,260

METHOD OF ERADICATING WOODY PLANTS

Ralph I. Kauffman, North Hills, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Oct. 8, 1971, Ser. No. 187,846

Int. Cl.² A01N 9/26

U.S. Cl. 71—110 4 Claims

1. In the process of eradicating oak plants with a combined effective amount of A) trichloroacetic acid, its conventional salts and esters and B) a mixture containing equal proportions of 2,4-dichlorophenoxyacetic acid and 2,4,5-trichlorophenoxyacetic acid, their conventional salts and esters, the improvement consisting of applying onto the ground and over the root systems of said plants component A and applying to the foliage or upper portions of said plants component B wherein component A is applied in a ratio of about 2.5 to 5 parts for each part of component B.

3,940,261

PROCESS FOR PREPARING CRYSTALLINE SILVER PARTICLES HAVING ELECTRICALLY CONDUCTIVE SURFACES AND PRODUCT

Clarence C. Dannelly, and John M. McIntire, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 492,795, July 24, 1974, abandoned. This application Feb. 3, 1975, Ser. No. 546,661

Int. Cl.² C22B 5/00

U.S. Cl. 75—.5 A 8 Claims

1. Process for the reduction of water soluble silver salts to prepare crystalline silver particles ranging in size from about 10–100 microns, the silver particles being characterized by exceptionally clean, bright, electrically conductive surfaces, said process comprising reducing a water soluble silver salt in a redox reaction at a temperature of about 0° to about 50°C. for about 2 to 24 hours, said silver salt being present as an aqueous solution in a concentration of about 0.25–1.0 mole per liter of water, dilute nitric acid being present in the amount of 0.1 to 3 ml. per liter of silver salt solution, and a reducing agent characterized by an oxidation potential within −0.150 volts of the silver salt under the conditions of the reaction solution, solubility of about 0.025 or more moles per liter of water at 25°C., and being present in a concentration of 1 to 1.25 molar equivalents, based on the silver ion to be reduced, dissolved in about 0.5 to 2 liters of water.

4. Process for the reduction of silver nitrate to prepare crystalline silver particles ranging in size from about 10–100 microns, the silver particles being characterized by exceptionally clean, bright, electrically conductive surfaces, said process comprising:

a. preparing an aqueous solution of silver nitrate, the concentration of said silver nitrate being in the range of about 0.25–1.0 mole per liter of water;
b. adding dilute nitric acid in the ratio of about 0.1 to 3.0 ml. per liter of said aqueous solution;
c. preparing an aqueous solution of reducing agent characterized by a oxidation within −0.150 of the silver salt under the conditions of the reaction solution, solubility of at least about 0.25 mole per liter at 25°C., and being present in the concentration of 1 to 1.25 molar equivalents, based on the silver nitrate, dissolved in about 0.5 to 2 liters of water;
d. blending said aqueous solution of reducing agent and said aqueous solution of silver nitrate to thereby reduce said silver nitrate in a redox reaction, said reaction being at a temperature of about 0–50°C. for about 2 to 24 hours;
e. filtering and washing said silver particles until the filtrate is essentially clear, and
f. drying said silver particles.

3,940,262

REINFORCED FOAMED METAL

Leonard M. Niebylski, Birmingham; Chester P. Jarema, Detroit, both of Mich., and Thomas E. Lee, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 235,294, March 16, 1972, abandoned, which is a continuation-in-part of Ser. No. 155,342, June 21, 1971, abandoned. This application Feb. 22, 1974, Ser. No. 444,823

Int. Cl.² C21B 5/02; B22D 27/00

U.S. Cl. 75—20 F 14 Claims

1. A process for producing a fiber reinforced aluminum-based metal foam, said process comprising dispersing with high speed stirring from about 0.1 to about 25 weight percent, based on the weight of said metal foam, of fibers from about 125 to about 1000 mils in length and having a ratio of length to diameter greater than 50 into a molten metal to be foamed which is aluminum or an aluminum alloy; increasing the viscosity of said molten metal by incorporating therein a viscosity-increasing agent selected from the group consisting of air, carbon dioxide, nitrogen, oxygen, water and the inert gases at

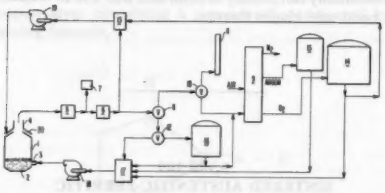
a temperature of from about 20° to about 90°C above the liquidous point of said molten metal; foaming said molten metal by treating the thickened molten metal with a foaming agent which is a metal hydride selected from the group consisting of titanium hydride, zirconium hydride and hafnium hydride; and cooling the foamed metal to set said foam.

3,940,263

STEELMAKING WITH INERT GAS BLOWING

Bartolomeo Morello, Via Ottorino Lazzarini n. 12, Rome, Italy

Filed Sept. 25, 1974, Ser. No. 509,223
Claims priority, application Italy, Sept. 25, 1973, 52724/73
Int. Cl.² C21C 5/38
U.S. Cl. 75—60 6 Claims



1. An oxygen steelmaking process for the selective removal of carbon from a bath of molten steel in a converter having a hood, said bath containing 10–18% by weight of chromium, comprising blowing into said bath an oxygen-argon mixture, removing dust and CO_2 from the effluent gases from said bath, passing one portion of said effluent gas beneath the hood of said converter thereby to reduce the flow of ambient air into said converter, and enriching another portion of said effluent gas in argon and recycling said enriched portion into said bath.

3,940,264

METHOD OF DISTRIBUTING MOLTEN METAL TO CONSUMER STATIONS

Sven Ivar Sieurin, Upplands Vasby, Sweden, assignor to Granges Essem Aktiebolag, Vasteras, Sweden

Filed May 31, 1973, Ser. No. 365,746
Claims priority, application Sweden, June 5, 1972, 7370/72
Int. Cl.² C22B 9/12; B22D 35/04
U.S. Cl. 75—65 R 7 Claims

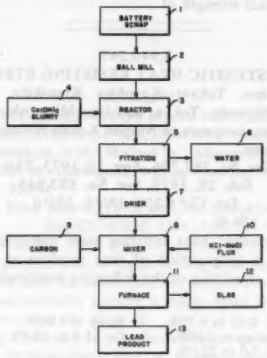
1. A process for distributing molten metal to consuming stations comprising the steps of providing a supply of molten metal in a heat insulated container having an enclosed atmosphere to establish a column of said molten metal in said container, the surface of said molten metal being exposed to said enclosed atmosphere in said container, while supplying heat to said column of molten metal to keep it at a desired temperature; leading off said molten metal from said container at a level substantially below the exposed surface of said column and passing it in open communication into one or more closed heat insulated and substantially horizontal distributing passages enclosing an atmosphere, to establish and maintain a substantially constant surface level of said led-off molten metal common to said container and said passages; supplying heat to said passages to keep the molten metal therein at a desired temperature; removing the molten metal from said passages at said consumer stations, thereby establishing and retaining on said molten metal in said container and passages a covering layer of slag formed in situ on said molten metal; and adding fresh solid metal to said supply of molten metal through said layer of slag in said container in such a manner as to maintain said slag layer on the surface of the molten metal in said container substantially undisturbed and to maintain said slag layer in said passages substantially unbroken.

3,940,265

RECOVERY OF LEAD FROM BATTERY SCRAP

Donald A. Wilson, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed June 25, 1975, Ser. No. 589,999
Int. Cl.² C22B 13/00
U.S. Cl. 75—77 3 Claims



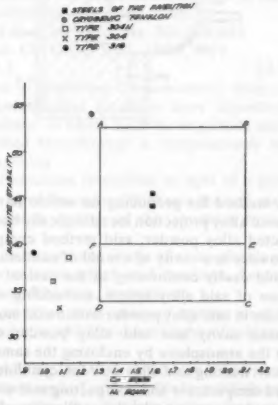
1. A process for recovery of lead from lead battery scrap comprising (1) reacting the scrap with an aqueous slurry of calcium hydroxide to form a product comprising lead oxide and calcium sulfate, (2) filtering and drying the reaction product and (3) reacting the product with a mixture of carbon and a KCl-NaCl flux at a temperature of about 605° to 700°C to flux the calcium sulfate and reduce the lead oxide to metallic lead.

3,940,266

AUSTENITIC STAINLESS STEEL

George N. Goller, Towson, and Ronald H. Espy, Randallstown, both of Md., assignors to Armco Steel Corporation, Middletown, Ohio

Continuation of Ser. No. 238,862, March 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 868,893, Oct. 23, 1969, abandoned. This application Feb. 25, 1974, Ser. No. 445,482
Int. Cl.² C22C 38/58
U.S. Cl. 75—128 A 5 Claims



1. An austenitic stainless steel consisting essentially of from 15.5% to 20% chromium, from 11% to 14% manganese, from 2.50% to 3.75% nickel, from 0.01% to 0.06% carbon, from

0.20% to 0.38% nitrogen, up to 0.06% phosphorus, up to 0.04% sulfur, up to 1% silicon, and remainder substantially iron except for incidental impurities, said steel having an austenite stability factor and a ferrite forming tendency, as hereinbefore defined, falling within the area ABEF of the accompanying graph, exhibiting no stress corrosion failure after 264 hours exposure to boiling magnesium chloride solution, by the hereinbefore described test, and having a Charpy V-notch impact strength of

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3,940,267

AUSTENITIC HEAT RESISTING STEEL

Tohru Mimino, Tokyo; Kazuhisa Kinoshita, Yokohama; Takayuki Shinoda, Tokyo, and Isao Minegishi, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 387,736, Aug. 13, 1973. This application Feb. 28, 1975, Ser. No. 553,945

Int. Cl.² C22C *38/48*, *38/50*

U.S. Cl. 75—128 G **2 Claims**

1. An austenitic heat resisting steel exhibiting excellent strength for a long period of time services at an elevated temperature consisting of the following composition;

C: 0.03 to 0.30%, Si: up to 1.00%,
Mn: up to 2.00%, Cr: 15.0 to 26.0%,
Ni: 7.0 to 22.0%.
0.02 to 1% of each of Nb(containing Ta) and Zr

wherein

the atomic ratio of (Nb+Zr) to C is within the range of 0.05 to 1.0, preferably 0.2 to 0.5 unavoidable impurities and the balance being Fe.

3,940,268

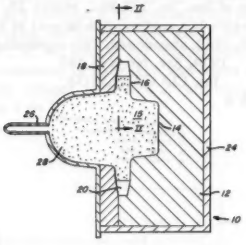
METHOD FOR PRODUCING ROTOR DISCS

John P. Catlin, Beaver, Pa., assignor to Crucible Inc., Pittsburgh, Pa.

Filed Apr. 12, 1973, Ser. No. 350,424

Int. Cl.² B22F *3/00*, *3/12*

U.S. Cl. 75—208 R **7 Claims**



1. A method for producing an article having at least one preformed alloy projection metallurgically bonded to a base of compacted alloy powder, said method comprising confining alloy powder in a cavity of a mold of nondeformable material, said mold cavity conforming to the desired configuration of said base of said alloy article, embedding a portion of said projection in said alloy powder within said mold cavity, sealing said mold cavity and said alloy powder confined therein against the atmosphere by enclosing the same in a collapsible container, heating said alloy powder, container and mold to an elevated temperature and compacting said alloy powder while at elevated temperature by the application of fluid pressure to compact the same to substantially full density and to metallurgically bond said preformed projection to said base of compacted alloy powder.

3. A method for producing a composite rotor disc having a hub of compacted alloy powder and a plurality of preformed alloy blades metallurgically bonded thereto, said method comprising confining alloy powder in a cavity of a mold of nondeformable material, said mold cavity having a first portion thereof conforming to the desired configuration of said hub and a second generally annular portion in communication with and surrounding said first portion, a plurality of preformed alloy blades positioned in spaced-apart relation with said second annular portion with a portion of each said blade being embedded in said alloy powder, sealing said mold cavity and said alloy powder confined therein against the atmosphere by enclosing the same in a collapsible container, heating said alloy powder, container and mold to an elevated temperature and compacting said alloy powder while at elevated temperature by the application of fluid pressure to compact the same to substantially full density to form said hub and to metallurgically bond said blades thereto.

3,940,269

SINTERED AUSTENITIC-FERRITIC CHROMIUM-NICKEL STEEL ALLOY

Theodore R. Bergstrom, Little Canada, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 743,588, July 10, 1968, Pat. No. 3,620,690. This application July 9, 1971, Ser. No. 161,916

Int. Cl.² B22F *3/16*

U.S. Cl. 75—214 **24 Claims**

1. A process comprising blending powdered austenitic chromium-nickel stainless steel, or powdered elemental constituents thereof, with powdered ferrite stabilizer or reducible precursors thereof, and sintering the resulting blend to produce an austenitic-ferrite chromium nickel alloy.

3,940,270

REPRODUCTION SYSTEM UTILIZING ION MODULATOR AND DIELECTRIC IMAGING SURFACE

Gerald A. Krulik, Washington, W. Va., and Harvey J. Sable, Cleveland, Ohio, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed May 6, 1974, Ser. No. 467,391

Int. Cl.² G03G *13/14*

U.S. Cl. 96—1.4 **12 Claims**

1. A process for electrophotographic reproduction which comprises

imparting a uniform electrostatic charge to a photoconductive ion modulator,

exposing the charged ion modulator to a pattern of light and shadow corresponding to an original image which is to be reproduced, thereby producing a latent electrostatic image thereon,

passing ions through the ion modulator carrying said latent electrostatic image to selectively impinge upon a duplex anodized aluminum dielectric surface comprising both barrier type aluminum oxide and porous type aluminum oxide on aluminum, thereby producing a latent electrostatic image thereon,

developing said latent electrostatic image with toner particles to produce a toned image thereon,

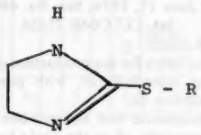
transferring said toned image to a receiving material and fixing said toned image upon said receiving material.

3,940,271
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masayoshi Kawai; Tadao Shishido; Shoji Ishiguro, and Tadao Sakai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 4, 1974, Ser. No. 439,675
Claims priority, application Japan, Feb. 2, 1973, 48-13514
Int. Cl.² G03C *7/24, 7/00, 5/32, 1/76*
U.S. Cl. 96—4 **13 Claims**

1. A color photographic light-sensitive material comprising a support having coated thereon at least one light-sensitive silver halide emulsion layer containing a yellow dye-forming coupler, at least one light-sensitive silver halide emulsion layer containing a magenta dye-forming coupler, at least one light-sensitive silver halide emulsion layer containing a cyan dye-forming coupler, and at least one light-sensitive silver halide emulsion layer containing a compound represented by the following formula,

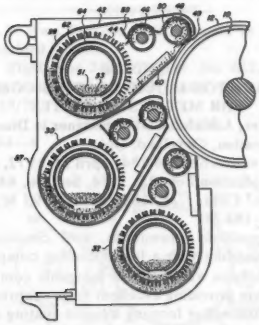


wherein R is an alkyl group having at least 12 carbon atoms.

3,940,272
METHOD OF DEVELOPING AN ELECTROSTATIC LATENT IMAGE

James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 255,259, May 22, 1972, Pat. No. 3,854,449. This application Jan. 4, 1974, Ser. No. 430,868
Int. Cl.² G03G *15/01, 15/08, 15/09*
U.S. Cl. 96—1.4 **3 Claims**



1. A method of rendering visible an electrostatic latent image, including the steps of:

activating a drive system for moving an assembly which transports developer mix to a developer roll being rotated by the drive system, whereby the reaction torque produced by the drive system pivots a developer housing having the transport assembly and developer roll located therein to dispose the developer roll adjacent the latent image in operative communication therewith;

attracting toner particles from the developer roll to the latent image;

de-activating the drive system to substantially remove the reaction torque being applied to the developer housing; and

resiliently urging the developer housing to pivot disposing the developer roll in an inoperative position spaced from the latent image.

3,940,273
SEQUENTIAL PEELING FOR MASK PREPARATION FOR FABRICATION OF MICROWAVE CIRCUITS

Loyd L. Woodham, 1303 Walnut St., Albertville, Ala. 35950, and Raymon H. Aldridge, 219 Longwood Drive SW., Huntsville, Ala. 35801

Filed May 8, 1973, Ser. No. 358,424
Int. Cl.² G03C *5/04, 5/00*
U.S. Cl. 96—27 R **1 Claim**

1. In the preparation of masks having opaque and translucent layers of film for fabrication of microwave circuits, the method of sequentially peeling a single mask for redundant use and comprising the steps of:

a. scribing a plurality of preselected empirically determined circuit combinations into a photographically opaque overlay film sheet without damaging a translucent substrate film;

b. removing the most simple circuit of opaque film from the scribed sheet;

c. photographing the resultant simple circuit comprising the remaining opaque and translucent film sheets;

d. peeling away the next most simple scribed circuit portion;

e. photographing the resultant circuit; and

f. repeating steps (d) and (e) until all desired circuits are photographed for further reduction.

3,940,274
SINGLE EMULSION PHASE AND AMPLITUDE TRANSPARENCY

Richard B. MacAnally, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Dec. 26, 1973, Ser. No. 428,443
Int. Cl.² G03C *5/00, 11/00, 5/04*
U.S. Cl. 96—38.3 **15 Claims**

1. The method of producing a transparency, from a single silver halide photosensitive emulsion layer deposited on a transparent substrate, in which both the amplitude and phase of light transmitted therethrough is independently spatially modulated, comprising

rendering said emulsion insensitive to light of a particular color within a predetermined thickness thereof, measured from the outside surface of the emulsion toward the substrate,

exposing said emulsion to an image of an amplitude mask in light of one color to which said emulsion, beyond said predetermined thickness, is sensitive,

exposing said emulsion to an image of a phase mask in light of another color to which said remainder of said emulsion is sensitive,

developing and fixing said film, to develop a silver image of said phase mask and of said amplitude mask therein,

controllably bleaching the developed silver image of said phase mask to produce an image which has phase variation, and

washing and drying said film.

3,940,275

RECORD MATERIAL AND MARKING LIQUID

Bruce W. Brockett; Ralph L. Marzocco, both of Dayton, and Fredrick D. Weaver, New Lebanon, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 220,413, Jan. 24, 1973, abandoned, and a continuation-in-part of Ser. No. 111,667, Feb. 1, 1971, abandoned. This application July 5, 1973, Ser. No. 376,636

Int. Cl.[2] C09D *11/00*

U.S. Cl. 106—19 3 Claims

1. In a substantially colorless but colorable marking liquid composition consisting essentially of an organic oil solution of a colorless reactant; the improvement comprising, as said reactant, (1) 1.7 to 2 weight percent of 3,3-bis(4-dimethylaminophenyl)-6-dimethylaminophthalide; (2) 0.0 to 1.5 weight percent of 3,7-bis(dimethylamino)-10-benzoyl phenothiazine; (3) 1.1 to 1.5 weight percent of a mixture of 2′-anilino-6′-diethylamino-3′-methylfluoran and 3,3-bis(1-ethyl-2-methylindol-3-yl)phthalide or 1.1 weight percent 2′ anilino-6′-dielhylamino-3′-methylfluoran wherein a ratio, by weight, of component (3) to components (1) and (2) is less than 1 to 1 and wherein the combination of components, when colored, yields an apparent blue-colored mark which absorbs substantially all of the visible spectrum between 400 and 500 millimicrons.

3,940,276

SPINEL AND ALUMINUM-BASE METAL CERMET

Lois E. Wilson, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,947

Int. Cl.[2] C04B *35/04, 35/10, 35/70*

U.S. Cl. 106—62 13 Claims

1. A dense, coherent, substantially homogeneous cermet composition of matter composed essentially of, on a weight basis, at least 60% magnesium aluminate spinel crystals, 0 to 10% alpha alumina crystals, 0 to 2% mullite crystals, 0 to 5% magnesium aluminum boride crystals and 10 to 30% aluminum-base metal phase.

3,940,277

GLASS-CERAMICS CONTAINING FIBERS EXHIBITING THERMOPLASTIC PROPERTIES

Joseph E. Pierson, and Stanley D. Stookey, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 1, 1974, Ser. No. 493,561

Int. Cl.[2] C03C *3/22*

U.S. Cl. 106—39.6 17 Claims

1. A glass-ceramic body exhibiting exceptional impact resistance consisting essentially of crystalline silica fibers contained within a residual glassy matrix, said fibers having a needlelike structure and being oriented in essentially a single direction, and said glass-ceramic body consisting essentially, by weight, of about 75–95% SiO_2 and 5–25% Na_2O and/or K_2O.

3,940,278

FIBER OPTICS

Warren W. Wolf, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed June 10, 1974, Ser. No. 477,881

Int. Cl.[2] C03C *3/04, 13/00*

U.S. Cl. 106—52 1 Claim

1. A boron-free glass composition capable of being the core glass or cladding glass in a light transmitting optical fiber product; said glass composition consisting essentially by weight of:

Ingredient	Weight Percent
SiO_2	40 to 50
Al_2O_3	5 to 7
BaO	30 to 50
Na_2O	5 to 20
Sb_2O_3	0 to 0.05

and having an index of refraction ranging from 1.55 to 1.65.

3,940,279

SIZE-GRADED TERNARY BATCH FOR BONDED BASIC REFRACTORY SHAPES

Donald L. Guile, Horseheads, and Robert K. Smith, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 17, 1974, Ser. No. 480,284

Int. Cl.[2] C04B *35/04*

U.S. Cl. 106—58 9 Claims

1. A size-graded batch for the production of basic refractory bodies consisting essentially of, with percentages on the weight basis, a mixture of,

dead-burned magnesite and at least one refractory grain consisting essentially of on the oxide basis 50–67% MgO and 33–50% CaO and selected from the group of dead-burned grain and fused grain,

25–35% being a fine magnesite fraction whose particles are substantially all −100 Tyler mesh and composed of said dead-burned magnesite,

20–30% being an intermediate refractory grain fraction whose particles are substantially all in the range of −4+65 Tyler mesh, substantially all at least $2\sqrt{2}$ times the size of the largest allowed particle in said fine magnesite fraction, and composed of said refractory grain, and

40–50% being a coarse refractory grain fraction whose particles are substantially all in the range of −4+65 Tyler mesh, substantially all at least $2\sqrt{2}$ times the maximum allowed particle size in said intermediate refractory grain fraction and composed of said refractory grain.

3,940,280

CONCENTRATE FOR LIQUID COATING COMPOSITION FOR METAL SUBSTRATES

Jon A. deRidder, Ashtabula, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation of Ser. No. 246,154, April 21, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,491

Int. Cl.[2] C08L *1/28;* 106 *190;193;193 M;204*

U.S. Cl. 106—193 M 18 Claims

1. A composition concentrate, said concentrate being adapted for blending with a liquid coating composition precursor that contains water-soluble inorganic compound, with said concentrate providing excellent foam suppression during blending and thereafter forming a liquid coating composition for application to a metal substrate, said concentrate being chromate-free and containing:

a. pulverulent metal flake;

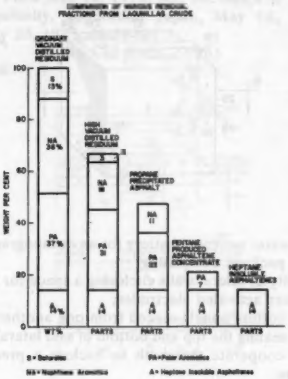
b. between about 0.1–3 weight percent, exclusive of liquid medium, of water-soluble cellulose ether; and having,

c. water based liquid medium, containing water-dispersible organic liquid providing a weight ratio of said pulverulent metal flake to said organic liquid of from about 1:4 to about 4:1, and with said organic liquid being present in an amount sufficient to supply at least about 5 volume percent of said liquid to the total volume of said coating composition.

3,940,281
ASPHALT COMPOSITION UTILIZING ASPHALTENE CONCENTRATE

Luke W. Corbett, Mountainside, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Nov. 23, 1973, Ser. No. 418,663
Int. Cl.[2] C10C *3/00*
U.S. Cl. 106—278 6 Claims

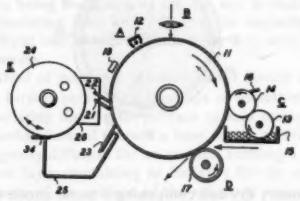


1. An asphaltic composition comprising one volume of an asphaltene concentrate containing from 40 to 90 wt. % of heptane-insoluble asphaltenes and from 10 to 60 wt. % of polar aromatics *derived from an asphaltic residuum*, blended with from one to four volumes of a petroleum fraction selected from the group consisting of an aromatic solvent extract of a lubricating oil fraction, said extract having a viscosity index below 30, a vacuum gas oil having a boiling range within the limits of about 600° to 1200°F. atmospheric equivalent vapor temperatures, and a naphthene-aromatic fraction of a gas oil.

3,940,282
BLADE CLEANING OF SURFACES WITH REVERSE MOVEMENT

Stephen C. P. Hwa, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 24, 1974, Ser. No. 482,716
Claims priority, application United Kingdom, June 29, 1973, 31046/73
Int. Cl.[2] B08B *1/02*
U.S. Cl. 134—6 5 Claims

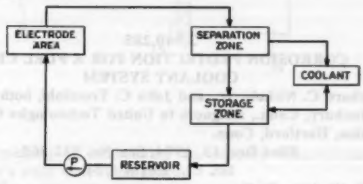


1. A method of cleaning liquid developer from an imaging surface which is capable of carrying an electrostatic latent image comprising intermittently moving the imaging surface in one direction relative to a stationary cleaning blade in engagement therewith with rest periods between periods of relative motion in said one direction, and before each such rest period reversing the relative motion between the stationary cleaning blade and the surface with the blade still in engagement with the surface and moving the cleaning blade away from said surface after reversing said relative motion.

3,940,283
HALOGEN HYDRATES

Philip C. Symons, Birmingham, Mich., assignor to Energy Development Associates, Madison Heights, Mich.

Division of Ser. No. 320,806, Jan. 3, 1973, which is a continuation-in-part of Ser. No. 244,222, April 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 50,054, June 26, 1970, Pat. No. 3,713,888. This application Feb. 7, 1975, Ser. No. 547,886
Int. Cl.[2] H01M *10/00*
U.S. Cl. 136—6 E 11 Claims



1. An electrical energy storage device comprising:
1. an electrode compartment means with at least one positive electrode means and one negative electrode means therein;
2. an aqueous metal halide electrolyte solution in said electrode compartment means;
3. electrolyte inlet means and electrolyte outlet means in said electrode compartment means positioned so as to provide for a flow of electrolyte past the surface of said electrode means;
4. external communicating means connecting said electrolyte inlet means and electrolyte outlet means externally of said electrode compartment means to provide means for the flow of electrolyte from said electrolyte outlet means to said electrolyte inlet means;
5. circulating means in said external communicating means for circulating said electrolyte solution through said electrode compartment means and recirculating said electrolyte solution exiting from said electrolyte outlet means in said electrode compartment means through said external communicating means and back to said electrode compartment means; and
6. storage means with solid halogen hydrate therein, said storage means having communicating means communicating with electrolyte inlet means for passing the halogen hydrate, or the thermal decomposition products of the stored halogen hydrate, namely, halogen and water, to said electrolyte solution as it is being recirculated through said external communicating means.

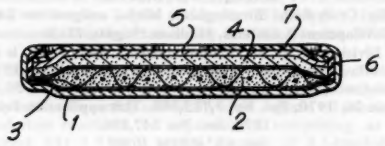
3,940,284
NICKEL OXIDE ELECTRIC CURRENT PRODUCING CELL

Samuel Ruben, 52 Seacord Road, New Rochelle, N.Y. 10801

Filed Jan. 21, 1975, Ser. No. 542,694
Int. Cl.[2] H01M *4/38*
U.S. Cl. 136—24 6 Claims

1. An electric current producing cell having a cathode comprising a porous electrically conductive finely divided

coating of carbon/silica gel bonded to and filling the spaces of a metal screen and an adherent deposition of a metal oxide



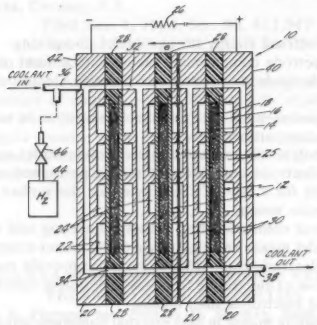
cathodically deposited on and impregnating said coated screen.

3,940,285

CORROSION PROTECTION FOR A FUEL CELL COOLANT SYSTEM

Richard C. Nickols, Jr., and John C. Trocciola, both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1974, Ser. No. 532,565
Int. Cl.² H01M 8/04
U.S. Cl. 136—86 R **24 Claims**



1. The combination of:

a fuel cell stack having a positive end and a negative end and comprising a plurality of cells connected electrically in series, said stack including components defining coolant channels for carrying a coolant fluid into heat exchange relationship with said cells and a coolant manifold passage extending from the positive to the negative end of said stack for distributing a coolant fluid to said channels, said components comprising an oxidizable material and being in electrical communication with said fuel cells and connecting them in series electrically; and

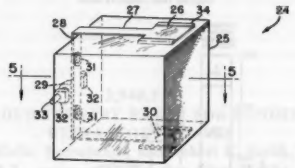
an ionically conductive coolant fluid within said manifold passage providing a path for shunt current from the positive to the negative end of said stack, said fluid including a gas mixed therein which oxidizes at the positive end of said stack at an electrochemical potential below which said material of said components at the positive end of said stack are oxidized for the level of shunt current through said fluid.

3,940,286

DEEP SEA PRESSURE COMPENSATED EXPENDABLE ENERGY SOURCE

Allen R. Waltz, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 13, 1975, Ser. No. 586,849
Int. Cl.² H01M 2/38
U.S. Cl. 136—100 R **10 Claims**



1. A seawater activated battery for an oceanographic instrumentation package comprising:

A plurality of lateral walls enclosing a space for positioning seawater activated electrodes;

top and bottom panels spaced from one another and effectively sealing the top and bottom of said lateral walls such as to cooperate therewith to enclose a predetermined volume;

aperture means in said top and bottom panels to permit fluid passage therethrough;

closure means configured and positioned to sealably close said apertures to prevent fluid passage therethrough;

retention means effectively connected to said closure means for holding said closure means in the sealably closed position relative to said aperture to prevent movement thereof;

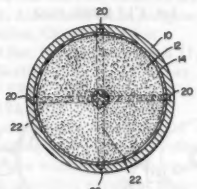
and actuation means to selectively overcome the action of said retention means for moving said closure means to a position permitting fluid flow through said apertures.

3,940,287

PRIMARY DRY CELL WITH GAS-VENTING PASSAGEWAY AROUND THE CATHODE MIX

Lewis Frederick Urry, North Olmsted, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,594
Int. Cl.² H01M 6/06
U.S. Cl. 136—107 **7 Claims**



1. A primary dry cell comprising a metal anode cup having an open end which is gas-tightly sealed by a closure including a vent and having a cathode mix therein comprising particles of an oxidic depolarizer, finely-divided conductive material and an electrolyte, separated from the side wall of said anode cup by a porous, ionically permeable separator, said closure and said cathode mix defining a void space therebetween, wherein a gas-venting longitudinal groove in the side wall of said anode cup communicating with said void space to thereby enable gas normally entrapped near the bottom of said anode

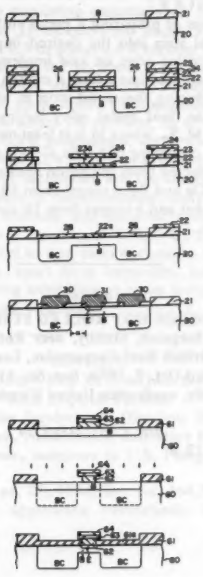
cup to pass freely around said cathode mix and into said void space from whence the gas can escape through said vent.

3,940,288

METHOD OF MAKING A SEMICONDUCTOR DEVICE

Mikio Takagi; Hajime Kamioka, both of Tokyo; Kazufumi Nakayama, Kawasaki, and Haruo Shimoda, Tama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 10, 1974, Ser. No. 468,876
Claims priority, application Japan, May 16, 1973, 48-54434; May 24, 1973, 48-58404
Int. Cl.² H01L 21/265
U.S. Cl. 148—1.5 19 Claims



1. A method of making a semiconductor device comprising the steps of forming an insulating film on a semiconductor substrate; selectively removing said insulating film to form therein a window to expose the surface of said semiconductor substrate therethrough; forming in said window a semiconductor layer containing an impurity for diffusion, said semiconductor layer being small in area enough not to make contact with said insulating film; and diffusing the impurity by heat treatment from said semiconductor layer into said semiconductor substrate.

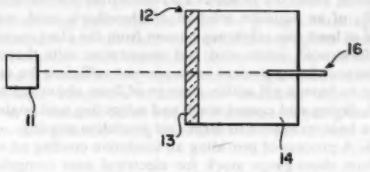
5. A method of making a semiconductor device according to claim 1, further comprising the steps of selectively removing said insulating film on the surface of said semiconductor substrate having formed therein a base region to form a window for impurity diffusion for an emitter; forming a polycrystalline silicon layer containing an impurity for the emitter on the entire area of the surface of the substrate assembly; patterning said polycrystalline silicon layer to be wider than the width of the emitter region ultimately obtained; selectively etching away that area of said insulating film on said base region which adjoins said polycrystalline silicon layer to leave said polycrystalline silicon layer in the form of an umbrella on said base region; effecting ion implantation of an impurity of the same conductivity type as said base region; and diffusing the impurity in said polycrystalline silicon layer by heat treatment into said base region to form therein said emitter region.

3,940,289

FLASH MELTING METHOD FOR PRODUCING NEW IMPURITY DISTRIBUTIONS IN SOLIDS

Charles L. Marquardt, Oxon Hill, and John F. Giuliani, Kensington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1975, Ser. No. 546,472
Int. Cl.² H01L 21/268
U.S. Cl. 148—1.5 7 Claims



1. A method of establishing an impurity concentration profile in a solid which comprises:

placing a solid with an impurity which has a segregation coefficient different from 1 by a factor greater than about 3 in an inert atmosphere;

attaching said solid to a heat sink;

flash melting said solid by a laser pulse with a duration from 1/10 to 1/1000 τ and an energy area density from E to 1 1/5E; and

allowing said solid to resolidify, thereby causing a freezing interface to pass through said solid.

3,940,290

PROCESS FOR PREPARING COPPER BASE ALLOYS

Michael J. Pryor; Jacob Crane, both of Woodbridge; Sam Friedman, and Eugene Shapiro, both of Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed July 11, 1974, Ser. No. 487,470
Int. Cl.² C22F 1/08; C22C 9/06
U.S. Cl. 148—2 10 Claims

1. A process for preparing wrought copper base alloys having good strength and bend characteristics, good solderability and low contact resistance which comprises:

A. providing a copper base alloy consisting essentially of from 7 to 14% nickel, from 1.5 to 3.3% tin with the minimum nickel plus tin content being 9.5%, a material selected from the group consisting of iron from 0.1 to 3%, cobalt from 0.1 to 3% and mixtures thereof wherein the minimum iron plus cobalt content in the alloy is 1.0%, balance copper;

B. hot rolling said alloy with a finishing temperature in excess of 550°C;

C. cold rolling said alloy with a cold reduction of at least 20%;

D. annealing said alloy at a temperature of from 300° to 850°C for at least 1 minute;

E. cold rolling the alloy with a reduction of at least 20%;

F. aging at a temperature of from 300° to 550°C for from 15 minutes to 24 hours; and

G. cold rolling the alloy with a reduction of from 20 to 55%, thereby providing a wrought copper base alloy having a fine grain size below 0.025 mm and characterized by the presence of a fine, dispersed magnetic phase containing said material selected from the group consisting of iron, cobalt and mixtures thereof.

3,940,291

INSULATIVE COATINGS FOR ELECTRICAL STEELS

James D. Evans, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 237,344, March 23, 1972, Pat. No. 3,840,378, which is a continuation-in-part of Ser. No. 39,649, May 22, 1970, abandoned. This application Mar. 25, 1974, Ser. No. 454,074

Int. Cl.[2] C23F 7/10

U.S. Cl. 148—6.15 R 12 Claims

1. A process of providing an insulative coating on oriented silicon steel sheet-gauge stock for electrical uses comprising the steps of applying to said stock a coating composition comprising an aqueous solution having a Mg/PO_4 mole ratio of from about 0.6 to about 1.5, said solution consisting essentially of an aqueous solution of phosphoric acid, magnesia, and at least one substance chosen from the class consisting of sulfuric acid, nitric acid and magnesium salts thereof, said substance being present in an amount sufficient for said solution to have a pH within a range of from about 0.5 to about 3.0, drying said coated stock and subjecting said coated stock to a heat treatment to form said insulative coating.

6. A process of providing an insulative coating on oriented silicon sheet-gauge stock for electrical uses comprising the steps of applying to said stock a coating composition comprising an aqueous solution having an Mg/PO_4 mole ratio of from about 0.6 to about 1.5, said solution consisting essentially of an aqueous solution of compounds chosen from the class consisting of mono-basic magnesium phosphate, di-basic magnesium phosphate, tri-basic magnesium phosphate, magnesia, and phosphoric acid, plus at least one substance chosen from the class consisting of sulfuric acid, nitric acid and magnesium salts thereof, said substance being present in an amount sufficient for said solution to have a pH within a range of from about 0.5 to about 3.0, drying said coated stock and subjecting said coated stock to a heat treatment to form said insulative coating.

3,940,292

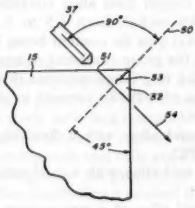
METHOD AND APPARATUS FOR FLAME-CUTTING CRACKED CORNER PORTIONS FROM CONTINUOUSLY CAST METAL WORKPIECES

Charles H. Bode, Jr., Bethel Park Borough, Allegheny County, and Thomas A. Cuscino, Scott Township, Allegheny County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 472,767, May 23, 1974, abandoned. This application Mar. 20, 1975, Ser. No. 560,424

Int. Cl.[2] B23K 7/00

U.S. Cl. 148—9 R 16 Claims



1. In a continuous-casting operation in which a workpiece at an elevated temperature travels within a casting machine and is subject to having cracks form in its corners, a method of flame-cutting a cracked corner portion from the workpiece comprising moving the workpiece past a cutting torch which is aimed at an angle of about 80° to 100° with respect to a plane which bisects the adjacent corner angle of the workpiece, whereby the torch cuts the workpiece along a line spaced from the corner and removes a segment of material which is triangular in cross section.

3,940,293

METHOD OF PRODUCING AMORPHOUS CUTTING BLADES

Donald E. Polk, Morristown, and Robert C. Morris, Flanders, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 317,039, Dec. 20, 1972, Pat. No. 3,871,836. This application Jan. 27, 1975, Ser. No. 544,164

Int. Cl.[2] C21D 1/00; B26B 21/54

U.S. Cl. 148—11.5 F 8 Claims

1. In a process of preparing a metal cutting implement by shaping a metal strip into the desired implement form and sharpening a cutting edge on said implement, the improvement which comprises quenching a molten metal alloy under conditions producing the metal strip in at least 50 percent amorphous state, said metal alloy having the composition represented by M_aX_b, where M is at least one element selected from the group consisting of Ni, Fe, Co, Cr and V, X is at least one element selected from the group consisting of P, B, C, Si, Al, Sb, Sn, In, Ge and Be, *a* ranges from 65 atomic percent to 90 atomic percent and *b* ranges from 10 atomic percent to 35 atomic percent.

3,940,294

COOLING OF HOT ROLLED STEEL STOCK

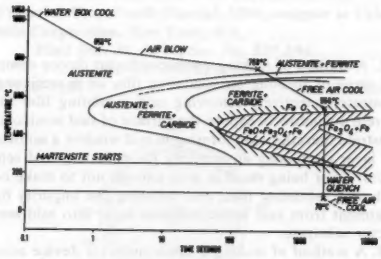
David Robert Sergeant, Maltby, near Rotherham, England, assignor to British Steel Corporation, London, England

Filed Oct. 7, 1974, Ser. No. 512,891

Claims priority, application United Kingdom, Oct. 17, 1973, 48350/73

Int. Cl.[2] C21D 7/14

U.S. Cl. 148—12 B 10 Claims



1. A method of cooling hot rolled steel stock in which
the stock is rapidly cooled immediately after rolling to a temperature (t_1) not less than that at which transformation of the body of the stock from austenite begins,
it is then free air cooled to a temperature (t_2) not less than that at which scale transformation from wustite begins, and
it is then water cooled to quench-in and suppress the transformation of the scale to magnetite.

3,940,295

LOW EXPANSION ALLOYS

David Francis Lupton, Birmingham; John Jefferson Mason, Willenhall, and Peter John Penrice, Hollywood, all of England, assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 466,286, May 3, 1974, abandoned. This application Oct. 25, 1974, Ser. No. 517,960

Claims priority, application United Kingdom, May 3, 1974, 21186/74; Mar. 4, 1974, 9641/74

Int. Cl.² C22C *38/10, 38/12, 38/08, 38/52*

U.S. Cl. 148—38 24 Claims

2. A dimensionally stable casting being in the as-cast, heat treated condition and made from a high-strength low expansion carbidic alloy consisting essentially of, by weight, from about 21 to about 35 nickel, from about 5 to about 18% cobalt, from about 0.3 to about 2.5% carbon, up to about 3% chromium, from about 0.2 to about 1.2% vanadium, up to about 3% molybdenum, up to about 0.5% aluminum, up to about 0.5% silicon, up to about 2% manganese, up to about 2% zirconium, up to about 2% niobium, up to about 2% tungsten, up to about 0.1% magnesium, up to about 0.05% calcium, and up to about 0.2% in total of at least one of the group consisting of yttrium, lanthanum and the lanthanides, with the provisos that the sum of the chromium, molybdenum, vanadium, zirconium, niobium and tungsten contents is in the range of from 1 to 4, the sum of % Ni + 0.75 (%Co) = 30.5 to 55, and the nickel to iron ratio is equal to or greater than 0.4:1, the balance, apart from impurities, being essentially iron and said casting exhibiting at room temperature a predominantly austenitic structure.

3,940,296

METHOD FOR GROWING EPITAXIAL LAYERS FROM THE LIQUID PHASE

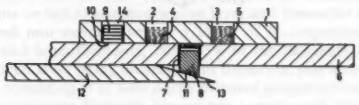
Theodorus Gerardus Jacobus van Oirschot; Willem Nijman, both of Eindhoven, Netherlands, and Marc Paul Andr Fougres, Paris, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 29, 1974, Ser. No. 464,790

Claims priority, application Netherlands, May 1, 1973, 73.6004

Int. Cl.² H01L *7/38*

U.S. Cl. 148—171 3 Claims



1. Method of providing a semiconductor material layer on a substrate, comprising the steps of:

a. providing a substrate holder comprising a recess for retaining a substrate and a reservoir defining member, said substrate holder defining at certain times the lower side of said reservoir;

b. providing a semiconductor material in said reservoir;

c. providing in said recess said substrate that comprises a flat surface;

d. moving at least one of said reservoir defining member and said substrate holder with respect to the other so as to locate said substrate surface at said reservoir;

e. depositing said semiconductor material on said surface while said substrate surface is located at said reservoir;

f. moving said substrate vertically with respect to said reservoir at least after said semiconductor material depositing step and while said substrate is disposed at said reservoir; and

g. laterally moving said substrate to a point removed from said reservor, whereby said vertical and lateral movements of said substrate permit excess said semiconductor material to be removed from said layer by said reservoir defining member.

3,940,297

GELLED EXPLOSIVE COMPOSITION AND PROCESS

Frederick Bolza, Victoria, Australia, assignor to ICI Australia Limited, Melbourne, Australia

Filed Nov. 5, 1973, Ser. No. 413,046

Claims priority, application Australia, Nov. 30, 1972, 1440/72

Int. Cl.² C06B *31/30*

U.S. Cl. 149—60 15 Claims

1. In the process for gelling water-bearing explosive compositions containing gum selected from the group consisting of galactomannans and xanthans with crosslinking agents in situ, the improvement which comprises incorporating in the reaction mixture a crosslinking agent comprising a redox system which system comprises at least one arsenious compound present in an amount from 0.01 to 5 millimoles per gram of said gum said gelation being conducted at a pH of from 4 to 8.

3,940,298

THERMAL LASER PUMPED WITH HIGH NITROGEN CONTENT PROPELLANTS

Werner F. Beckert, Las Vegas, Nev., and Ottmar H. Dengel, Front Royal, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 6, 1974, Ser. No. 530,258

Int. Cl.² C06B *25/34, 45/10;* C07C *76/02;* H01S *3/00*

U.S. Cl. 149—92 17 Claims

1. In a method of pumping thermal lasers comprising:

a. combusting a fuel and an oxidizer and (b) expanding the combustion products through a supersonic nozzle to produce a laser effect, the improvement wherein (1) said fuel comprises at least one selected from the group consisting of a tetrazole derivative, a ditetrazolyl derivative, a tetrazine derivative, a triazine derivative and a guanidine derivative, (2) said oxidizer comprises at least one selected from the group consisting of a high-energy aliphatic polynitro compound and a polynitroamine compound.

9. A composition comprising a fuel and an oxidizer suitable for use in a thermal laser:

a. said fuel being at least one selected from the group consisting of a guanidine derivative, a triazine derivative, a tetrazine derivative, a ditetrazolyl derivative, and a tetrazole derivative; and

b. said oxidizer being at least one selected from the group consisting of a high energy aliphatic polynitro compound and a polynitroamine.

3,940,299

METHOD FOR PRODUCING SINGLE-ORIENTED ELECTRICAL STEEL SHEETS HAVING A HIGH MAGNETIC INDUCTION

Isamu Goto; Isao Matoba, both of Chiba; Takuichi Imanaka, Kobe; Ko Matsumura, Chiba; Yoh Shimizu, Chiba; Tomomichi Goto, Chiba, and Takahiro Kan, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Sept. 26, 1974, Ser. No. 509,539

Claims priority, application Japan, Oct. 31, 1973, 48-121762

Int. Cl.² H01F *1/04*

U.S. Cl. 148—111 3 Claims

1. In a method for producing single-oriented electrical steel sheets having a magnetic induction of more than 1.85 wb/m² including the steps of preparing raw material for the sheets, hot rolling the raw material to a hot strip having an intermedi-

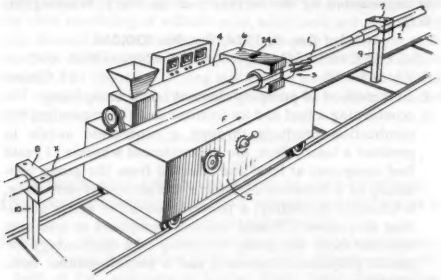
ate gauge of 2–/4mm, subjecting said hot strip to repeated annealing and cold rolling steps including a final cold rolled steel sheet having its final gauge and subjecting the resulting sheets to a decarburization annealing and a final annealing to develop secondary recrystallized grains of (110) [001] orientation; the improvement comprising utilizing a raw material formulation consisting essentially of less than 4% of Si less than 0.06% of C, 0.02–0.2% of Mn, 0.005–0.1% in total of at least one of S and Se, at least one member selected from the group consisting of 0.015–0.4% of elements (Xi) and 0.2–1.0% of elements (Xj), said element (Xi) being at least one of As, Bi, Pb, P, Sn_n; and said element (Xj) being at least one of Ni and Cu, with the remainder of the materials being iron; said improvement further comprising a two-step final annealing including a secondary recrystallization annealing at a temperature of 800°-920°C. to fully develop the secondary recrystallized grains and a purification annealing at a temperature of 1,100°–1,200°C.

3,940,300

METHOD AND APPARATUS FOR EXTRUDING A LAYER OF EXTRUDABLE MATERIAL ON A BODY HAVING INACCESSIBLE ENDS

Paolo Gazzana Priaroggia, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Jan. 14, 1974, Ser. No. 433,236
Claims priority, application Italy, Mar. 23, 1973, 22031/73
Int. Cl.² B29C *27/24*; H01B *7/02*, *13/14*, *13/24*
U.S. Cl. 156—49 **7 Claims**



1. In a method for applying a layer of extrudable material on a portion of an elongated body of indefinite length whose ends are not accessible, said portion having a predetermined cross-sectional dimension, comprising:

encircling said body at said portion by a split extrusion mold having at least one inlet opening, having means for extruding said layer on said body, having a length less than said portion and having a longitudinally extending, interior bore of a size greater than the cross-section of said body to permit relative longitudinal movement of said mold and said body;

connecting said mold to a source of said material in fixed relation to said mold;

while injecting said material from said source into said mold, causing relative movement between said mold and said body in a direction such that said portion passes through said mold and said layer is applied to said portion;

and terminating the injection of said material into said mold when said portion is covered by a layer of said material;

the steps of connecting said mold to said source, prior to injecting said material, by:

providing an extrusion head intermediate said source and said mold, said head having a longitudinally extending cavity defined by a unitary C-shaped wall, said cavity extending from one end to the other of said head for receiving said mold and engaging the exterior thereof, said head having a passageway therethrough with an outlet opening at the wall of said cavity for the passage of said material from said source to said mold and said head, in the form assumed thereby when it engages said mold, said head having a single longitudinally extending, unobstructed slot extending from one end to the other thereof and from the exterior of said head to said cavity to provide a longitudinally extending entrance into said cavity from the exterior of said head, said slot having a constant width at least as great as said predetermined dimension but less than the cross-sectional exterior of said mold;

inserting a length of said body into said head cavity through said slot and in a direction transverse to the length of said body;

encircling said body by said mold by placing it around a length of said body outside said head;

moving said mold and said head relative to each other in a direction longitudinally of said body to insert said mold into said head cavity between said body and said head and to align said outlet opening of said head with said inlet opening of said mold; and

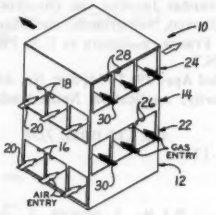
holding said mold in fixed relation to said head.

3,940,301

METHOD OF MANUFACTURING AN OPEN CELLULAR ARTICLE

Raymond L. Straw, Peoria, and Larry R. Wilson, Mossville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 1, 1974, Ser. No. 493,755
Int. Cl.² B32B *31/20*
U.S. Cl. 156—155 **15 Claims**



1. A method of manufacturing a ceramic open cellular article comprising,

forming a ceramic based mixture into a plurality of sheets of wall forming members,

independently forming a disintegratable filler mixture into a plurality of wall support members,

then assembling said wall forming members and said support members in contiguous relation to provide a relatively solid structure with said wall forming members being disposed in edgeward contact with each other to form a plurality of joints therebetween,

subsequently heating said structure and permitting said support members to partially decompose while still bracing said wall forming members and causing said wall forming members to harden and said joints to fuse in a predetermined pattern, and

removing the remainder of said decomposed support members to provide a plurality of accurately-shaped openings in the ceramic article.

3,940,302

NON-WOVEN MATERIALS AND A METHOD OF MAKING THEM

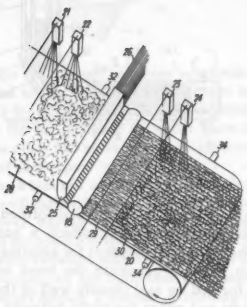
Kenneth Gerald Matthews, and John Richardson, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 337,465, March 2, 1973. This application Feb. 4, 1975, Ser. No. 546,984

Claims priority, application United Kingdom, Mar. 2, 1972, 9803/72

Int. Cl.[2] D04H *3/08*

U.S. Cl. 156—167 14 Claims



1. A process for making a bonded non-woven web comprising depositing a blend of homofilaments and bicomponent filaments in a random and serpentine manner on an advancing collector surface, to form a non-woven layer, laying a warp of equispaced and parallel yarns of continuous bicomponent filaments on top of said non-woven layer and thereafter laying a second non-woven layer of a blend of bicomponent filaments and homofilaments, 20%–65% of the filaments of the non-woven layer being bicomponent filaments, said homofilaments, consisting of at least partly oriented polypropylene and the bicomponent filaments having two components arranged in a core/sheath relationship, the core component being not less than 30 percent by volume and not more than 80 percent by volume and being composed of at least partly oriented polypropylene, and the sheath being a copolyamide which is capable of being rendered adhesive in pressurized saturated steam at a pressure which leaves the core component substantially unaffected, and the equispaced and parallel yarns being composed of oriented bicomponent continuous filaments haveing a sheath/core relationship, the sheath component being a copolyamide which can be rendered adhesive in pressurized saturated steam at the pressure required to render the sheath component of the bicomponent filaments of the web adhesive, which steam pressure leaves the core component of the filaments comprising said equispaced and parallel yarns unaffected, there being at least 80 such yarns per meter (measured in the crosswise direction), and thereafter treating the structure in a steam chamber fitted with inlet and outlet steam seals, the steam chamber being supplied with saturated steam at a pressure which, together with the pressure applied by the seals on the structure serves to bond the bicomponent filaments at points of contact.

3,940,303

METHOD OF PRODUCING TARNISH RESISTANT COPPER AND COPPER ALLOYS AND PRODUCTS THEREOF

Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 177,292, Sept. 2, 1971, Pat. No. 3,764,400, which is a continuation-in-part of Ser. Nos. 59,684, July 30, 1970, Pat. No. 3,677,828, and Ser. No. 67,943, Aug. 28, 1970, Pat. No. 3,716,423. This application Mar. 26, 1973, Ser. No. 344,905

Int. Cl.[2] C23F *7/12*

U.S. Cl. 156—316 11 Claims

1. A method of producing a flexible laminate, comprising:

A. providing a material selected from the group consisting of copper foil and copper sheet,

B. applying to a surface of said material a phosphoric acid solution of at least 8 percent concentration and containing from 3.5 grams per liter up to the solubility limit of a material selected from the group consisting of sodium dichromate and potassium dichromate and mixtures thereof, for at least 2 seconds, to form a uniform, glassy-like, substantially pore-free coating of copper phosphate from 20 to 1000 Angstroms thick, provided that when the concentration of phosphoric acid is increased, the minimum dichromate concentration is proportionately increased,

C. rinsing said material for at least 2 seconds in water at a pH of at least 8.0 and at a temperature from about 90°C up to the boiling point,

D. drying said material, and

E. adhesively laminating a plastic film to said surface.

6. A method of producing a flexible laminate comprising:

A. providing a material selected from the group consisting of copper foil and copper sheet,

B. oxidizing a surface of said material to form a surface oxide film from 150 to 1000 Angstrom units in thickness

C. applying a phosphoric acid solution of at least 8 percent concentration to said oxide film to form thereon a uniform, glassy-like, substantially porefree coating of copper phosphate,

D. rinsing said material for at least two seconds in water at a pH of at least 8.0, and at a temperature from 90°C up to the boiling point,

E. drying said material, and

F. adhesively laminating a plastic film to said surface.

3,940,304

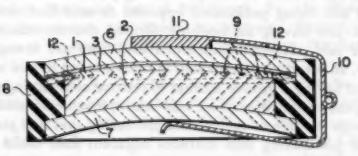
METHOD OF MAKING COMPOSITE LIGHT-POLARIZING ELEMENT

Norman W. Schuler, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 249,651, May 2, 1972, Pat. No. 3,833,289, which is a continuation-in-part of Ser. No. 41,504, May 28, 1970, abandoned, Division of Ser. No. 726,141, May 2, 1968, abandoned. This application Apr. 1, 1974, Ser. No. 456,606

Int. Cl.[2] B29F *1/10*; B32B *27/04*; B29C *6/00*

U.S. Cl. 156—245 4 Claims



1. The method of manufacturing synthetic plastic light-polarizing ophthalmic lens which comprises:

applying as a continuous coating on each surface of a light-polarizing element a layer which enhances adhesion between said light-polarizing element and subsequently in situ polymerized lens components and significantly inhibits migration of lens constituents to said light-polarizing element during polymerization;

securing said coated light-polarizing element into a mold;

providing a continuous layer of a synthetic plastic monomeric material over the entire surface of each side of said light-polarizing element which will comprise the light transmission area of the ultimately formed lens; and

causing said monomeric material to polymerize thereby forming a composite light-polarizing ophthalmic lens.

3,940,305
TOOL FOR INTERCONNECTING SHEET WEBS BY WELDING

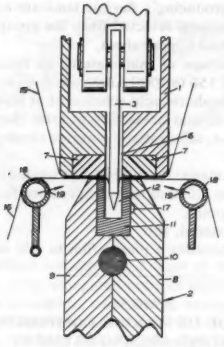
Folke Gustav Adolf Stenberg, Ookungalv, Sweden, assignor to IWEMA Forpacknings AB, Goteborg, Sweden

Filed Mar. 14, 1973, Ser. No. 340,967

Claims priority, application Sweden, Mar. 29, 1972, 4071/72

Int. Cl.² B32B *31/20*

U.S. Cl. 156—515 **5 Claims**



1. An improved tool for interconnecting sheet webs together by heat welding and for severing the interconnected sheets, said tool comprising two opposite jaws, the first of said jaws being devoid of any heating means and carrying cutting means, the second of said jaws being provided with heating means and being positioned opposite to said first jaw, said second jaw having an opening formed therein adapted to receive said cutting means when said jaws are brought together, an insert piece received in said opening in said second jaw and having a groove therein to receive said cutting means during the cutting operation, said insert piece being positioned level with the side of said second jaw facing said first jaw, said second jaw having side surfaces adjacent said insert piece forming longitudinal welding surfaces on either side of said insert piece, the material of said insert piece being considerably less heat conductive than the material of said second jaw for precluding the transmission of heat from said second jaw to said cutting means.

3,940,306
LABEL MAGAZINE FOR LABELING MACHINES

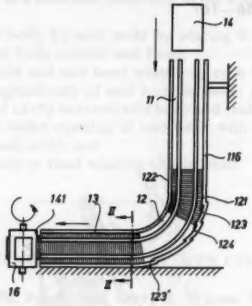
Hans Schmidl, Dortmund-Aplerbeck, Germany, assignor to Hermann Kronseder, Worth (Danube), Germany

Filed June 13, 1974, Ser. No. 479,013

Claims priority, application Germany, June 26, 1973, 2332848

Int. Cl.² B65C *9/08*; B65G *11/20*; B65H *1/00*

U.S. Cl. 156—570 **5 Claims**



1. In a label magazine having a bend formed by inside and outside magazine walls between which a pack of stacked labels is confined, the improvement for assisting packed labels located in the bend to negotiate the bend and comprising ratchet teeth formed on said outside wall of the bend to successively narrow and widen the space between said walls and cause fanning of the labels in the pack as they negotiate the bend.

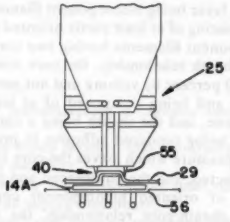
3,940,307
APPARATUS FOR SECURING ARTICLES TO FILM-LIKE MATERIAL

Samuel J. Rivman, White Plains, and Alvaro Da Costa, Garnerville, both of N.Y., assignors to Eastern Poly Packaging Company, Brooklyn, N.Y.

Division of Ser. No. 306,109, Nov. 13, 1972. This application Feb. 19, 1974, Ser. No. 443,653

Int. Cl.² B32B *31/00*

U.S. Cl. 156—514 **10 Claims**



1. An apparatus for securing a heat-sealable fastener having an upright projection to heat sealable film or the like comprising:

a. means for positioning a snap fastener beneath said film;

b. means for stretching said film across said projection;

c. annular, rotatable knife means for forming an aperture in said film while stretched so that said projection extends therethrough;

d. means for rotating said knife; and

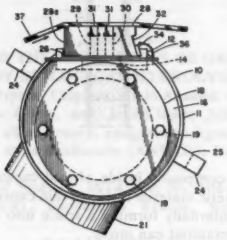
e. means for heat sealing said film to said fastener at least partially around said aperture.

3,940,308

SUCTION PIPE WITH QUICK DISCONNECT COVER

Phillip E. Blanchfield, Hortonville, Wis., assignor to Appleton Specialty Products Inc., Appleton, Wis.

Filed June 7, 1974, Ser. No. 477,453
Int. Cl.[2] D21F 1/48
U.S. Cl. 162—363 6 Claims



1. A suction pipe for a paper machine comprising:

a. a pipe adapted to be connected to a vacuum means, said pipe having a longitudinally extending dovetail seat that is tapered in the longitudinal direction from one end of the seat to the other and slots therethrough extending into the interior of said pipe;

b. a cover having a tapered configuration complementary to the tapered configuration of said seat and mounted in said seat, said cover having passages therethrough aligned with said slots for conducting a liquid into said pipe; and

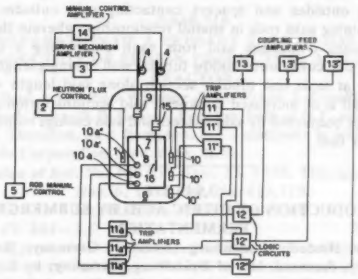
c. an insert located between said cover and said pipe in said seat and providing an air tight seal with said pipe and cover, said insert having a portion extending above said seat, said insert being laterally removable from said seat upon longitudinal movement of said cover in said seat away from said air tight position to free said insert, said cover thereby being laterally removable from said seat.

3,940,309

ELECTROMAGNETIC SAFETY DEVICE FOR THE SUSPENSION OF THE RODS IN A NUCLEAR REACTOR

Franco Imperiali, Rome, Italy, assignor to Comitato Nazionale per l'Energia Nucleare, Rome, Italy

Filed Apr. 10, 1973, Ser. No. 349,691
Claims priority, application Italy, Apr. 14, 1972, 49626/72
Int. Cl. G21c 7/12, 7/18, 7/36
U.S. Cl. 176—22 2 Claims



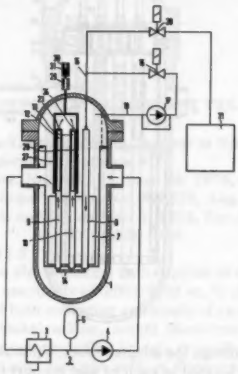
1. An electromagnet coupling for supporting a safety rod and a control-and-safety rod in a nuclear reactor which coupling comprises a plurality of electromagnet means acting in parallel on a single armature common to all of them each of said electromagnet means being provided with an energizing winding adapted for being fed separately from the other; in which coupling a fraction only of the total number of electromagnet means is necessary for holding the suspended rod.

3,940,310

NUCLEAR REACTOR

Leonhard Irion, Ruckersdorf, and Walter Kollmar, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 1, 1973, Ser. No. 328,674
Claims priority, application Germany, Feb. 2, 1972, 2204836
Int. Cl.[2] G21C 7/16
U.S. Cl. 176—36 R 6 Claims



1. A pressurized-water reactor comprising a reactor pressure vessel having an inside with an upper portion and a lower portion, said portions containing pressurized-water core coolant, a nuclear core in said lower portion, said core comprising fuel element and at least three substantially vertical control rod guide tubes therein, said guide tubes having top and bottom ends, a duct interconnecting said bottom ends, a guide tube adaptor positioned in said upper portion of said vessel and above said core, said adaptor comprising a substantially vertically high-pressure feed line tube having a bottom end releasably connecting with said top end of a first one of said guide tubes, said adapter also including a substantially vertical guide tube extension for each of said other guide tubes, each said guide tube extension having a bottom end registered with a top end of a respective one of said other guide tubes, said extensions each having a top end having a passage for said coolant, and which is open to said vessel's said upper portion, a control rod reciprocative in each of said other guide tubes and their respective guide tube extensions, said first one of said guide tubes being void of any control rod said feed line tube having a top end, and means for controllably removing a portion of said coolant from said vessel and increasing the removed coolant's pressure and returning the coolant to said top end of said high-pressure feed line.

3,940,311

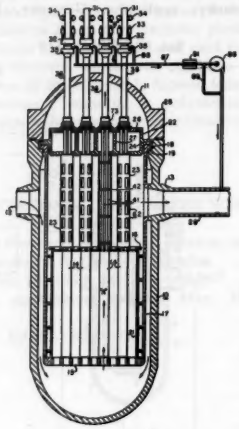
NUCLEAR REACTOR INTERNALS CONSTRUCTION AND FAILED FUEL ROD DETECTION SYSTEM

Erling Frisch, deceased, late of Pittsburgh, Pa. (by Dorothy Randal, executrix), and Harry N. Andrews, Export, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 219,781, Jan. 21, 1972, Pat. No. 3,817,829. This application July 9, 1973, Ser. No. 377,846
Int. Cl. G21c 7/08
U.S. Cl. 176—36 R 13 Claims

1. In a nuclear reactor having a pressure vessel with a removable closure head and fuel assemblies mounted within the vessel between a lower core plate and an upper core plate, in combination, means supporting the lower core plate and the fuel assemblies, an upper support plate mounted in the vessel,

support tubes extending between the upper support plate and the upper core plate to support the upper core plate, rectilinearly movable control rods for preselected fuel assemblies, drive shafts attached to the control rods, adapter tubes extending through the closure head, said drive shafts entering



the vessel through the adapter tubes, a plurality of control rod guide tubes located in each of said support tubes and extending the length thereof, and at least one of said control rod drive shafts and its attached control rod in each of said guide tubes.

3,940,312

NUCLEAR FUEL AND PROCESS OF PREPARATION THEREOF

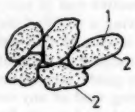
Walter Jan Van Lierde, Mechelen, Belgium, assignor to Studiecentrum Voor Kernenergie, "S.C.K.", Brussels, Belgium

Filed July 20, 1972, Ser. No. 273,368

Claims priority, application Belgium, July 26, 1971, 770488

Int. Cl. G21c *3/06*

U.S. Cl. 176—67 **3 Claims**



1. A nuclear fuel comprising monocrystalline particles with a maximum size lying between 20 μ and 400 μ, of carbide of uranium or uranium-plutonium with vanadium carbide in supersaturated solution, and coated with a layer of vanadium carbide with a maximum thickness of 10 μ.

3,940,313

DEVICE FOR DETECTING DEFECTIVE NUCLEAR REACTOR FUEL RODS

Josef Steven, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 240,511, April 3, 1972, abandoned. This application Nov. 21, 1973, Ser. No. 418,009

Int. Cl. G21c *3/16*

U.S. Cl. 176—68 **5 Claims**

1. A nuclear reactor fuel rod comprising a nonmagnetic tubular jacket having an end portion, an end cap closing said end portion, nuclear fuel in said jacket, said fuel and end cap defining therebetween a space inside of said jacket, a capsule-like housing positioned in said space, said housing being made of non-magnetic material and having at least one hole formed therethrough, a mixture of aluminum powder and a water-soluble mercury compound inside of said capsule-like housing, and ferromagnetic material inside of said capsule-like housing, said housing internally forming a space into which said mixture and said material can move.

3,940,314

NUCLEAR REACTOR FUEL ELEMENT

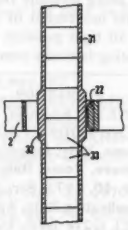
Diethelm Knodler; Hans Kropfl, both of Erlangen; Peter Rau, Mittelehrenbach, and Theodor Wittmann, Sassanfahrt, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 2, 1972, Ser. No. 231,322

Claims priority, application Germany, Mar. 10, 1971, 2111349

Int. Cl. G21c *3/30*

U.S. Cl. 176—78 **10 Claims**



1. A nuclear reactor fuel element comprising fuel rods having outsides and spacers contacting said outsides and maintaining said rods in spatial relationship; wherein the improvement comprises said rods each comprising a casing having one continuous hollow tubular wall having a length and having at least one tubular section along said length where said wall is of increased thickness, said sections forming said outsides contacted by said spacers and said casings containing nuclear fuel.

3,940,315

PRODUCTION OF CITRIC ACID BY SUBMERGED FERMENTATION

Helmut Hustede, Ladenburg (Neckar), Germany; Herman Rudy, deceased, late of Heidelberg, Germany; by Liselotte Rudy nee Ringelmann, heir; by Hans Rudy, heir, both of Heidelberg, Germany, and by Barbara Sallewsky nee Rudy, heir, St. Hermas, Canada, assignors to Joh. A. Benckiser GmbH, Ludwigshafen (Rhine), Germany

Filed Nov. 2, 1971, Ser. No. 195,076

Int. Cl.[2] C12D *1/04*

U.S. Cl. 195—36 R **23 Claims**

1. The method of preparing mycelial pellets of a citric acid-producing miroorganism for the manufacture of citric

acid in a carbohydrate-containing growth medium which comprises treating spores of a citric acid-producing microorganism in the carbohydrate-containing growth medium free of unbound cyanide ions by adding ferro- or ferri-cyanide ions during the physiologically intensive development period which takes place during the transition period ranging from the spore-swelling stage to the spore-germination stage, and forming mycelial pellets thereform.

3,940,316

PROCESS FOR THE PRODUCTION OF ORGANIC ACIDS BY BIOLOGICAL HYDROLYSIS

Auguste Commeyras, Clapiers; Alain Arnaud, Clermont L'Herault; Pierre Galzy, and Jean-Claude Jallageas, both of Montpellier, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Sept. 17, 1974, Ser. No. 506,717

Claims priority, application France, Sept. 19, 1973, 73.33613

Int. Cl.² C12D *1/02*

U.S. Cl. 195—50 **10 Claims**

1. A process for preparing an organic acid by hydrolyzing the corresponding nitrile comprised of (a) suspending bacteria showing nitrilasic activity in a solution containing nitrile, (b) hydrolyzing said nitrile with said bacteria to form the organic acid, and (c) recovering said organic acid from said solution.

3,940,317

METHOD OF ISOLATION OF LYSOZYME

Friedrich D. Katz, 96-08 70th Ave., New York, N.Y. 11375; Louis Fishman, 143 N. Grove St., Valley Stream, N.Y. 11580, and Milton Levy, 39-95 48th St., New York, N.Y. 11104

Filed Apr. 6, 1973, Ser. No. 348,780

Claims priority, application Germany, Feb. 26, 1973, 2309440

Int. Cl.² C07G *7/02, 7/022, 7/026*

U.S. Cl. 195—66 R **19 Claims**

1. A method of isolating lysozyme from a source thereof comprising:

a. treating an aqueous suspension of said lysozyme containing source material with deaminated squid chitin,

b. separating the chitin from said suspension, washing said chitin with aqueous acid and separating said aqueous acid from said chitin.

3,940,318

PREPARATION OF A PRIMARY TARGET FOR THE PRODUCTION OF FISSION PRODUCTS IN A NUCLEAR REACTOR

Hirofumi Arino, New Windsor, N.Y.; Frank J. Cosolito, Ringwood; Kenneth D. George, Boonton, both of N.J., and Alfred K. Thornton, New Hampton, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 100,918, Dec. 23, 1970. This application Nov. 6, 1973, Ser. No. 413,319

Int. Cl. B01k *3/00*; C01g *43/00*

U.S. Cl. 204—1.5 **3 Claims**

1. A process for the preparation of a primary target for the production of fission products in a nuclear reactor, said target being comprised of (a) an enclosed metallic cylindrical vessel sealed at its top and bottom, (b) means for permitting access to the interior of said vessel, and (c) a thin, continuous, uniform layer of a fissionable uranium material, integrally bonded to the inner cylindrical walls of said vessel, said process comprising the steps of:

a. electrodepositing a uranium material onto the inner cylindrical walls of said vessel by electrolyzing a system comprised of:

i. an anode,

ii. said vessel as the cathode,

iii. an aqueous electrolytic bath containing at least one uranyl salt enriched in uranium 235 and having a pH of from about 4 to about 8 said electrolyzing being effected at a temperature of from about 50° to about 100°C; and at a current which is periodically and sequentially cycled from about 0.3 to about 0.6 to about 0.9 amperes, and

b. sealing said top and bottom of said vessel.

3,940,319

ELECTRODEPOSITION OF BRIGHT TIN-NICKEL ALLOY

Martin H. Pollack, Brooklyn, NY, assignor to NASGLO International Corporation, Flushing, N.Y.

Division of Ser. No. 482,279, June 24, 1974, which is a continuation-in-part of Ser. No. 389,579, Aug. 20, 1973, abandoned. This application Nov. 1, 1974, Ser. No. 519,833

Int. Cl.² C25D *3/60*

U.S. Cl. 204—43 S **7 Claims**

1. An aqueous electroplating bath capable of depositing an alloy consisting essentially of 0.001–0.30 wt. % nickel and the balance tin, said bath consisting essentially of (a) a nickel salt selected from nickel sulfate, nickel fluoborate and nickel sulfamate, (b) a corresponding tin salt, (c) sulfuric acid, sulfamic acid, benzene sulfonic acid or fluoboric acid in an amount providing a pH of not higher than 1, and (d) an effective amount of a brightening agent, wherein the concentration of said tin salt is at least about 1 oz./gal. and the weight ratio of said nickel salt to said tin salt is at least 0.20 to 1.

3,940,320

ELECTRODEPOSITION OF COPPER

Otto Kardos, Ferndale; Donald A. Arcilesi, Mount Clemens, and Silvester P. Valayil, Pontiac, all of Mich., assignors to M & T Chemicals Inc., Greenwich, Conn.

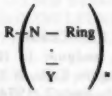
Continuation-in-part of Ser. No. 315,112, Dec. 14, 1972, abandoned. This application Nov. 21, 1974, Ser. No. 525,940

Int. Cl.² C25D *3/38*

U.S. Cl. 204—52 R **10 Claims**

1. A process for electrodepositing copper from an aqueous acidic copper plating bath containing at least one member independently selected from each of the following two groups;

A. 0.005 to 40 grams per liter of an aryl N-heteroaromatic or N-heteroaliphatic ring compound or salt exhibiting the structure



wherein R is selected from the group consisting of phenyl, benzyl and p-xylyl and the N-Ring is selected from the group consisting of substituted and unsubstituted N-heteroaliphatic rings and substituted and unsubstituted N-heteroaromatic rings; Y is present or absent; Y, when present, represents an anionic moiety, *n* is save when R is p-xylyl *n* is 2; and

B. sulfoalkyl sulfide compounds containing the grouping —S—Alk—SO_3M where M is one gram-equivalent of a cation and —Alk— is a divalent aliphatic hydrocarbon group of 1 to 8 carbon atoms in an amount of 0.01 milligrams per liter to 1000 milligrams per liter.

3,940,321

METHODS OF TREATING ALUMINIUM

Ronald Alfred Charles Adams, Mitcham, England, assignor to Ozalid Group Holdings Limited, Loughton, Great Britain

Filed Mar. 21, 1975, Ser. No. 560,887
Int. Cl.² C25D *11/08, 11/12*
U.S. Cl. 204—58 10 Claims

1. A method of treating aluminium, the method comprising the steps of first anodising the aluminium by electrolysis in sulphuric acid solution, then secondly anodising the said aluminium by electrolysis in phosphoric acid solution.

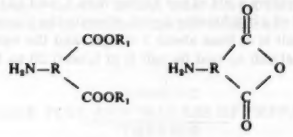
3,940,322

ELECTROPOLYMERIZATION OF DIFUNCTIONAL MONOMERS TO FORM POLYIMIDES

David C. Phillips, and William M. Alvino, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 13, 1974, Ser. No. 497,175
Int. Cl.² C25B *3/00*
U.S. Cl. 204—59 R 13 Claims

1. A method of polymerizing a monomer having a general formula selected from the group consisting of:



and mixtures thereof, where R is a trifunctional organic group and each R_1 is independently selected from hydrogen and salt groups, said $COOR_1$ and —CO— groups being viscinal or on the same carbon atom of R, comprising:

1. forming a solution of said monomer in a suitable non-interfering solvent organic; and
2. passing a direct electrical current through said solution at a current density of at least about 0.2 mA/cm².

3,940,323

ANODE FOR ELECTROLYTIC PROCESSES

Edward H. Cook, Jr., Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 494,110, Aug. 2, 1974, Pat. No. 3,882,002. This application May 5, 1975, Ser. No. 574,805
Int. Cl.² C25B *1/26, 1/16, 11/08, 11/10*
U.S. Cl. 204—95 8 Claims

6. In a method of electrolyzing aqueous alkali metal chloride solutions in an electrolytic cell comprising an anode and a cathode wherein chlorine and an alkali metal hydroxide are formed, the improvement which comprises using as the anode, a composite structure comprising a valve metal substrate, a coating thereon of electroconductive tin oxide containing a doping amount of molybdenum, and an outer coating on the surface of the electroconductive tin oxide, of at least one of a noble metal or noble metal oxide.

3,940,324

METHOD OF DECOMPOSING CALCIUM CARBONATE

Iosif Gershevich Abramson, Varshavskaya ulitsa, 22, kv. 16, Leningrad, U.S.S.R.; Vasily Andreevich Glukhikh, Belgradskaya ulitsa, 10, korpus 1, kv. 5, Leningrad, U.S.S.R.; Solomon Isaakovich Danjushevsky, ploschad Chernyskevskogo, 7, kv. 79, Leningrad, U.S.S.R.; Georgy Borisovich Egorov, Grazhdansky prospekt, 90, korpus 2, kv. 103, Leningrad, U.S.S.R.; Raisa Andreevna Zozulya, 9 linia, 76, kv. 7, Leningrad, U.S.S.R.; Jury Vasilievich Nikiforov, Zanevsky prospekt, 30, kv. 23, Leningrad, U.S.S.R.; Rafail Manusovich Nudelman, Nevsky prospekt 61, kv. 1, Leningrad, U.S.S.R.; Alexandr Mikhailovich Khomyakov, Ivanovskaya ulitsa, 18, kv. 15, Leningrad, U.S.S.R.; Yanetta Markovna Tseitlin, prospekta Veteranov, 40, kv. 10, Leningrad, U.S.S.R.; Evgeny Grigorievich Komar, deceased, late of Leningrad, U.S.S.R.; by Khaya Semenovna Boguslavskaya, Kuznetsovskaya ulitsa 36, 26, Leningrad, U.S.S.R., administratrix; Olga Efremova Komar ulitsa Grazhdanskaya 16, Kv. 11, Pushkin Leningradsko oblasti, U.S.S.R., administratrix; Alexandr Eugenievich Komar, Kuznetsovskaya ulitsa, 36, Kv. 26, Leningrad, U.S.S.R., administrator.

Filed Dec. 4, 1974, Ser. No. 529,516
Int. Cl.² B01J *1/10*
U.S. Cl. 204—157.1 H 6 Claims

1. A method of decomposing calcium carbonate into calcium oxide and carbon dioxide gas, comprising exposing calcium carbonate to an ionizing radiation at a power of the absorbed radiation dose of at least 0.5 Mrad/s.

3,940,325

RADIATION-STERILIZED SHAPED ARTICLES OF OLEFIN POLYMERS

Seiji Hirao, Ichihara, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed Aug. 24, 1973, Ser. No. 391,413
Claims priority, application Japan, Aug. 24, 1972, 47-84715
Int. Cl. B01J *1/10;* C08f *45/58, 1/10*
U.S. Cl. 204—159.20 6 Claims

6. A process for producing radiation-sterilized shaped articles of an olefin polymer without coloration and degradation in physical properties, which comprises shaping an olefin polymer or polymers containing 0.01 to 0.5% by weight based on the weight of the olefin polymer of at least one material selected from the group consisting of octadecyl 3,5-di-t-butyl-4-hydroxyhydrocinnamate and tetrakis (methylene (3,5-di-t-butyl-4hydroxyhydrocinnamate)) methane, and then irradiating with a sterilizing dose of high energy radiation, said olefin polymer being selected from the group consisting of homopolymers of propylene; homopolymers of porpylene containing therein 0.1–4% by weight based on the weight of homopolymers of propylene, of ethylene-propylene rubber; propylene-ethylene copolymers containing therein 0.5–20% by weight based on the weight of propylene, of ethylene; high density polyethylenes having a density of 0.950 to 0.965 g/c.c.; low density polyethylenes having a density of 0.905 to 0.925 g/c.c.; and homopolymers of propylene containing therein 0.5–4% by weight based on the weight of homopolymers of propylene, of high density or low density polyethylene.

3,940,326

METHOD OF COATING CATHODE HEATERS

Martha J. B. Thomas, Winchester; Richard A. Fowler, Ipswich, both of Mass., and Robert C. Larson, Exeter, N.H., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Feb. 16, 1972, Ser. No. 226,706
Int. Cl.² C25D *13/02*
U.S. Cl. 204—181 8 Claims

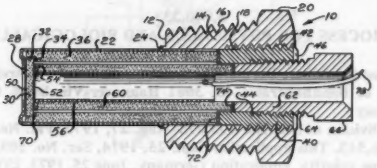
1. In the process of coating heaters for use with indirectly heated cathodes of electron tubes the steps which comprise: preparing a solution containing dissolved tungsten and dissolved aluminum; atomizing said solution in a stream heated above the boiling point of water to yield dry particles contain-

ing an aluminum compound and a tungsten compound; first firing said particles to eliminate volatiles and convert said aluminum compound to alumina; second firing said particles at a higher temperature in a reducing atmosphere to reduce said tungsten compound to elemental tungsten; third firing said particles at a still higher temperature in a reducing atmosphere to crystallize said particles; dispersing said particles in a coating suspension and electrophoretically coating said heaters therewith.

3,940,327
OXYGEN SENSING DEVICE

Melvin H. Wagner; Sandra B. Corcoran, both of Bartlett, and Carl F. Bauer, Chicago, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 11, 1975, Ser. No. 567,445
Int. Cl.² G01N 27/46
U.S. Cl. 204—195 S **10 Claims**

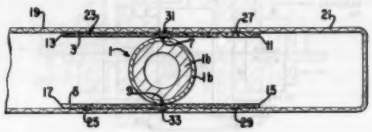


1. A measuring cell for determining the concentration of oxygen in a mixture of exhaust gases comprising: a hollow metal housing member having mounting means adapted to be received in a complementary opening in a combustion engine exhaust system for positioning the inner end of said housing member within said exhaust system while leaving the outer end outside the exhaust system, said housing member having a radially inwardly extending annular flange portion at its inner end; a solid electrolyte wafer positioned inside said housing at the inner end thereof, said solid electrolyte wafer having a first electrode coating on a first side thereof in tight mechanical and electrical contact with said inwardly extending flange portion, said solid electrolyte wafer having a second electrode coating on its second side; a hollow tubular metal member positioned concentrically within said housing and having a radially outwardly extending annular flange portion of less maximum diameter than the wafer positioned in tight mechanical and electrical contact with said second electrode coating; a first tubular insulating sleeve positioned in surrounding relation to said hollow tubular metal member so as to exert axial pressure on said outwardly extending flange portion; a second tubular insulating sleeve positioned between said first tubular insulating sleeve and the inner wall of said housing, said second tubular insulating sleeve having a radial portion which spaces and insulates the edge of said electrolyte wafer from said metal housing, said second tubular insulating sleeve further having a transverse surface portion in axial engagement with the second side of said electrolyte wafer at a location radially outwardly of said radially outwardly extending flange portion of said tubular metal member, sealing means positioned at at least the axial juncture of said second tubular insulating sleeve and said electrolyte wafer; and threaded locking means for applying axial pressure to each of said insulating sleeves.

3,940,328
RECONSTRUCTED OR REPAIRED ELECTRODE STRUCTURE

Vaselios H. Thomas, Florence, Ala., and Gerald R. Pohto, Mentor, Ohio, assignors to Electronor Corporation, Panama City, Panama

Filed Apr. 11, 1974, Ser. No. 459,923
Int. Cl.² C10G 19/00, 17/00
U.S. Cl. 204—283 **15 Claims**



1. A repaired electrode comprising an elongated supporting riser having at least a surface coating of valve metal, at least a portion of a generally planar dimensionally stable previously used coated active electrode member bonded to said riser coating, a generally planar electrode second member having a new electrocatalytic coating thereon secured to at least one of said riser coating or a portion of said previously used electrode member.

3,940,329
HYDROCARBON CONVERSION WITH A MULTIMETALLIC CATALYTIC COMPOSITE

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 436,305, Jan. 24, 1974, which is a continuation-in-part of Ser. No. 233,819, March 10, 1972, Pat. No. 3,798,155. This application Aug. 1, 1974, Ser. No. 493,957
Int. Cl.² C10G 35/08; B01J 23/42
U.S. Cl. 208—139 **14 Claims**

1. A process for converting hydrocarbon which comprises contacting the hydrocarbon, at hydrocarbon conversion conditions, with a catalytic composite consisting essentially of porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, about 0.1 to about 3.5 wt. % halogen, and bismuth in an amount sufficient to result into an atomic ratio to bismuth of platinum or palladium of about 0.1:1 to about 1:1, wherein the platinum or palladium, rhodium, and bismuth are uniformly dispersed throughout the porous carrier material and wherein substantially all of the platinum or palladium, rhodium, and bismuth are present in the corresponding elemental metallic states.

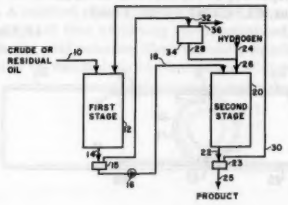
3,940,330
TWO STAGE METAL-CONTAINING OIL HYDRODESULFURIZATION PROCESS EMPLOYING AN ACTIVATED ALUMINA SUPPORTED CATALYST IN EACH STAGE

Harold Beuther, Gibsonia; Sun W. Chun, Murrysville, and Angelo A. Montagna, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 24, 1974, Ser. No. 463,620
Int. Cl.² G10G 23/02
U.S. Cl. 208—210 **15 Claims**

1. A process for hydrodesulfurizing a metal-containing hydrocarbon feed oil at a temperature between 600° and 1,000°F., and a hydrogen pressure between 50 and 5,000 psi comprising passing said feed oil and hydrogen through first and second hydrodesulfurization zones in series with interzone removal of gaseous by-products, the catalyst in said first and second zones comprising Group VI-B and Group VIII metals supported on alumina said alumina being prepared by drying

and calcining a crystalline alumina hydrate having 1.2 to 2.6 mols of water of hydration per mol of alumina, and maintaining the temperature in said second zone higher than the temperature in said first zone.

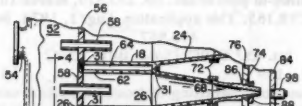


3,940,331

VORTICAL CYCLONE CLUSTER APPARATUS

Edward L. Rastatter, 340 E. 64th St. 11F, New York, N.Y. 10021

Filed Nov. 1, 1974, Ser. No. 519,810
Int. Cl.² B04C 5/28
U.S. Cl. 209—211 **23 Claims**



1. A cyclone assembly comprising a first wall member and a second wall member disposed in substantially parallel relation, means defining a plurality of corresponding sets of aligned openings within said first and second wall members, a cluster arrangement of elongated hydrocyclones having longitudinally extending parallel axes, each of said hydrocyclones including a rigid tubular inlet portion and a frusto conical portion having an apex end defining an outlet, said inlet portion of each of said hydrocyclone extending between a corresponding set of openings within said first and second wall members, a casing surrounding said first and second wall members and cooperating therewith to define a liquid supply chamber, means for directing a liquid at a substantial hydraulic pressure into said supply chamber, means forming an axially extending vortex passage for each of said hydrocyclones and projecting through the corresponding said opening within said first wall member, means defining a generally tangential inlet within said inlet portion of each hydrocyclone for directing the liquid from said supply chamber into said inlet portion of each hydrocyclone, means for rigidly securing said inlet portion of each said hydrocyclone to said first and second wall members, and said inlet portions of said hydrocyclones forming rigid connections between said first and second wall members to provide for withstanding the substantial hydraulic pressure of the liquid within said supply chamber.

3,940,332

TREATING WASTE WATER CONTAINING NITRILES AND CYANIDES

Akinori Kato, Hiratsuka, and Kenji Yamamura, Kamakura, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Dec. 20, 1974, Ser. No. 534,794
Claims priority, application Japan, Sept. 6, 1974, 49-101910
Int. Cl.² C02C 5/10
U.S. Cl. 210—2 **3 Claims**

1. A process for the microbiological degradation of nitriles and cyanides contained in a waste water effluent which comprises

i. adding at least one microorganism capable of degrading nitriles and cyanides to an aqueous sludge, said microorganism being the strain *Nocardia rubropertincta*, ATCC 21930;

ii. acclimating said microorganism to said activated sludge; and

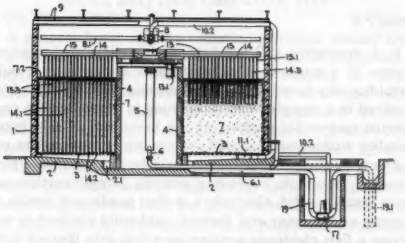
iii. passing a waste water effluent containing nitriles and cyanides through the thus acclimated sludge whereby the microbiological disintegration of the nitriles and cyanides is accomplished, thus purifying the waste water effluent.

3,940,333

PROCESS FOR PHYSICALLY AND BIOLOGICALLY PURIFYING SEWAGE

August Schreiber; Berthold Schreiber, and Erhard Schreiber, all of Bahnhofstrasse 45, 3001 Hannover-Vinnhorst, Germany

Division of Ser. No. 392,078, Aug. 27, 1973, Pat. No. 3,876,543. This application Sept. 25, 1974, Ser. No. 509,041
Claims priority, application Germany, June 25, 1973, 2332218
Int. Cl.² C02C 1/04
U.S. Cl. 210—17 **2 Claims**



1. A process for the purification of sewage by means of a filter-percolating filter filled with a non-abrasive granular filter material, comprising the steps of:

first distributing preliminarily clarified sewage equally over the surface of the filter material, so that the sewage trickles through the filter material;

then simultaneously ventilating the filter material by means of passing air therethrough;

then allowing the sewage to trickle through the filter material until sludge and microorganisms of the sewage have covered the surface of the filter material in increasing bulk and the passage of air through the filter material has increasingly been reduced as a result of the incrustations formed by the covering in the gaps of the filter material;

after such gaps have been covered following the above steps, the process further comprises filling the filter-percolating filter with rinsing water for the purpose of agitating and washing of the filter material;

blowing air under pressure into the filter so as to mix the filter material and rinsing water therein;

drawing in the largest portion of the sludge resulting during the preceeding steps from the mixture of retained rinsing

water, filter material and sludge through suction pipes extending into the filter material,

draining off the rinsing water,

the mixing of the rinsing water and filter material and the drawing in of the sludge being carried out progressively in a horizontal direction by the passing of a rotation device and a sludge removal device including said suction pipes through the contents of the filter-percolator filter.

3,940,334
METHOD FOR SEPARATING OIL FROM WATER

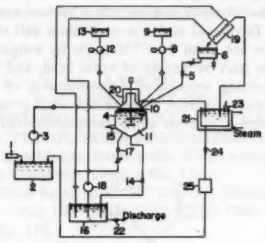
Tadashi Miyazawa, Tokyo, Japan, assignor to Kayaba Industry Co., Ltd.; Mitsubishi Industries, Ltd., both of Tokyo and E. C. Chemical Industries Co., Ltd., Osaka, all of, Japan

Filed Mar. 18, 1974, Ser. No. 451,763

Claims priority, application Japan, Mar. 16, 1973, 48-30595

Int. Cl.² B01D *11/04*

U.S. Cl. 210—21 **9 Claims**



1. A method of separating oil from industrial waste water, comprising the steps of introducing into a treatment vessel industrial waste water which contains fat and oil at a level of about 100 parts per million to tens of thousands parts per million; agitating the waste water in said treatment vessel introducing paraffinic hydrocarbons with a specific gravity of less than 0.8 as a fat-and oil-extracting solvent agent into the waste water, and also a coagulant, in the course of said agitating step so that a layer of oil-containing scum forms on top of a body of treated clean water, said solvent agent being introduced in an amount of between 0.001 – 10% of the oil and fat and said coagulant being introduced in an amount of between 0.1 – 50% of the waste water; withdrawing the treated clean water into a treated-water pool; floating the layer of oil-containing scum upwardly in the treatment vessel by charging treated clean water from the treated-water pool into the treatment vessel at the lower part thereof until the layer of scum overflows the treatment vessel; introducing the overflowing layer of oil-containing scum into a distillation vessel and distilling the solvent therein to vaporized the solvent and form a residual oil-containing scum; recovering the solvent for re-use by introducing the solvent vapor to a condenser for condensation; filtering the residual oil-containing scum, from which the solvent has been recovered, in a filter so as to separate a liquid component; and recycling said filtered liquid component into the waste water to be treated.

3,940,335
FILTERING PROCESS AND APPARATUS

Peter Gabor Kalman, 51 Compayne Gardens, London N.W.6, England

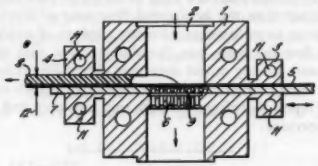
Filed Aug. 17, 1973, Ser. No. 389,183

Claims priority, application United Kingdom, Aug. 29, 1972, 40064/72; Oct. 10, 1972, 46683/72

Int. Cl. B01d *33/00*

U.S. Cl. 210—77 **24 Claims**

1. A process for filtering a substance flowing through a passage comprising introducing a filter by passing it through inlet and outlet ports flanking said passage so that a part of the filter extends across said passage, sealing said ports against substantial leakage therethrough of said substance, supporting at least said filter part extending across said passage by means of a filter backing support permeable to flow therethrough of substance filtered by said filter, said filter backing support being reciprocable in the direction of extension of said filter



between said ports and across said passage, forcing said substance through said filter to filter the substance, and, when desired, effecting movement of said filter to introduce a fresh part thereof across said passage by moving said backing support in a direction to advance said filter under conditions such that the filter moves with the backing support, and subsequently retracting said backing support under conditions such as to prevent movement of the filter with the backing support.

3,940,336
METHOD FOR CLEANING SEMIPERMEABLE MEMBRANES

Clement C. Macevicz, and Charles W. Million, both of San Diego, Calif., assignors to Desalination Systems, Inc., Escondido, Calif.

Filed June 21, 1974, Ser. No. 481,522

Int. Cl.² B01D *23/24*; B03B *3/00*; B08B *3/00*

U.S. Cl. 210—81 **7 Claims**

1. A method for cleaning a surface of a semipermeable membrane in a membrane process solution treatment system which comprises:

a. flushing the said surface of said semipermeable membrane with water at substantially atmospheric pressure and of purity greater than about one megohm resistivity.

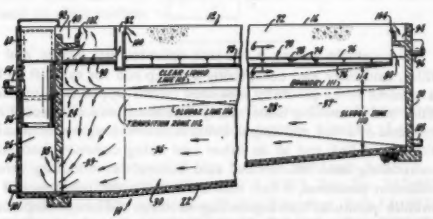
3,940,337
HORIZONTAL FLOW CLARIFIER

Herbert D. Robison, Norwood, Mass., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Continuation of Ser. No. 347,031, April 2, 1973, abandoned. This application Nov. 18, 1974, Ser. No. 524,606

Int. Cl.² B01D *21/24*

U.S. Cl. 210—197 **11 Claims**



1. Apparatus for separating suspended solids from liquids, comprising: a tank, a horizontally elongated settling corridor defined within said tank for directing liquid therethrough in a substantially horizontal flow direction so as to define an upper free-fall settling zone and a lower sludge zone; a liquid entrance at one end of the settling corridor; a sludge contact

zone defined within said tank for receiving liquid entering said tank; a secondary settling basin; a substantially vertical partition wall positioned in facing relationship to the liquid exiting from said settling corridor, said partition wall being positioned so as to define a passageway therebelow to receive the liquid from the sludge zone leaving said corridor and a passageway thereabove to receive liquid from the free-fall zone leaving said corridor; means associated with said partition wall for causing the horizontal flow rate of liquid in said sludge zone to be greater than the horizontal flow rate of liquid in said free-fall zone so as to cause a kinetic capture of solids settling from the free-fall zone into the sludge zone; said secondary settling basic having outlet means to direct liquid to service; and said sludge contact zone having sludge return means for directing liquid therefrom through said entrance and into said settling corridor.

3,940,338

LIFTING VEHICLE HAVING A CONTROL MEMBER ADJUSTABLE INTO THREE DIFFERENT POSITIONS

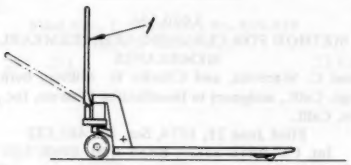
Anders Ivar Bryntse, Mjolby, and Karl-Erik Berkestad, Linkoping, both of Sweden, assignors to Ab Bygg- Och Transportekonomi (BT), Mjolby, Sweden

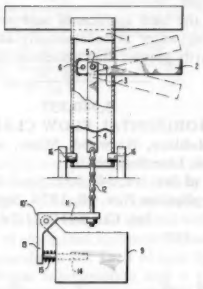
Continuation-in-part of Ser. No. 400,629, Sept. 25, 1973, abandoned. This application Mar. 27, 1975, Ser. No. 562,899

Claims priority, application Sweden, Oct. 3, 1972, 12733/72

Int. Cl.² B62D *21/14*

U.S. Cl. 254—2 R **3 Claims**





1. A vehicle having a lift-jack-operated lift device and a tiller, said tiller also comprising a pump rod for said lift jack, a control lever pivotally mounted in the upper part of said tiller and extending transversely therefrom and connected to one end of a link rod displaceably mounted lengthwise of said tiller, said link rod at its other end being connected to and controlling said lift device, said control lever taking three different positions, a first and a second outer position and a middle position, corresponding to three different displacement positions of the link rod, said link rod in these different positions setting the lift device for three different functions, said link rod further being spring loaded for moving said control lever into its second outer position, a locking device for said control lever for locking said lever only in its middle position and having such a weak force in relation to said spring, that when the control lever is manually kept in its first outer position against said spring and is released therefrom said lever will be automatically moved by said spring into said second outer position thereby passing the middle position without being locked there.

3,940,339

LITHIUM BORATE COMPLEX GREASE EXHIBITING SALT WATER CORROSION RESISTANCE

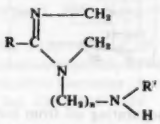
George A. Clarke, Jr., and Gary L. Harting, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Jan. 21, 1975, Ser. No. 542,800

Int. Cl.² C10M *3/18, 5/14, 7/20, 7/24*

U.S. Cl. 252—18 **7 Claims**

1. A lubricating grease composition of high dropping point and capable of protecting metal surfaces against salt water corrosion which comprises a major proportion of a mineral lubricating oil, from about 2 to 30 wt. % of a thickener system whose essential components include a lithium soap of a C_{12} to C_{24} hydroxy fatty acid and a monolithium salt of boric acid, wherein there are from 3 to 100 parts by weight of hydroxy fatty acid per part by weight of boric acid, and a salt-water-corrosion resisting amount of a combination of a dialkyl dimethyl ammonium nitrite, wherein the alkyl groups have 8 to 18 carbon atoms, and an amino imidazoline of the general structure:



wherein n is about 2 to 6, R is a C_6 to C_{22} aliphatic hydrocarbon group and R′ is hydrogen or a C_1 to C_{12} alkyl group.

3,940,340

PERACYLATED POLYAMINES COMPATIBLE WITH OPTICAL BRIGHTENERS AS ACTIVATORS FOR INORGANIC PEROXO COMPOUNDS

Hans Walter Bucking; Peter Hess, both of Kelkheim, Taunus; Franz Konig, Frankfurt am Main; Wilfried Sahm, Kelkheim, Taunus, and Gerhart Schneider, Schneidhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 7, 1974, Ser. No. 431,044

Claims priority, application Germany, Jan. 12, 1973, 2301437

Int. Cl.² C11D *7/54*

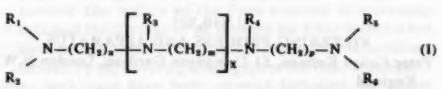
U.S. Cl. 252—102 **16 Claims**

1. A composition of matter consisting essentially of

a. 69 to 96.9% by weight of a detergent,

b. 0.1 to 1% by weight of an optical brightener and

c. 3 to 30% by weight of a compound of the formula



(I)

in which R_1 to R_6 are alkanoyl of 2 to 8 carbon atoms or benzoyl, x is an integer of zero to 3 and n, m and p are 2 or 3.

15. A composition of matter consisting essentially of an inorganic peroxo compound and a compound of formula I as defined in claim 1.

3,940,341

GRANULAR DETERGENT COMPOSITIONS

Frederick William Gray, Summit; Virgil John Richter, West Orange, and Andrew Henry Limekiller, Belle Meade, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,986
Int. Cl.² C11D 7/54
U.S. Cl. 252—105 **12 Claims**

1. Process for the production of hollow granules of detergent compositions containing sulfite which retains its content on storage under heated conditions which comprises forming an aqueous slurry containing an organic detergent and alkali metal sulfite, wherein, by weight based on the total non-volatile constituents of said slurry, the amount of detergent is from about 5% to about 40% and the amount of sulfite is from about 3% to about 70%, said slurry being at an elevated temperature of at least 90°F, agitating said slurry, spraying said slurry into a hot evaporative atmosphere of about 300°F to about 900°F to form air-containing hollow granules of the detergent composition containing at least 3% of sulfite.

3,940,342

AZEOTROPE OF 1,2-DICHLORO-1,1,2-TRIFLUOROETHANE AND TRICHLOROFLUOROMETHANE

William M. Hutchinson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 13, 1973, Ser. No. 396,814
Int. Cl.³ C11D 7/50; C23G 5/02
U.S. Cl. 252—171 **5 Claims**

1. The substantially constant boiling admixture of (A) 1, 2 -dichloro- 1, 1, 2-trifluoroethane and (B) trichlorofluoromethane which at substantially atmospheric pressure is characterized as about 28–29 weight percent (A) and about 72–71 weight percent (B).

3,940,343

METHOD OF PREPARING HALOPHOSPHATE PHOSPHOR OF CONTROLLED PARTICLE SIZE

Donald J. Demarest, Butler, and Herman R. Heytmeijer, Whippany, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1973, Ser. No. 345,390
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.³ C09K 11/42
U.S. Cl. 252—301.4 P **3 Claims**

1. An improved method of preparing halophosphate phosphor of controlled particle size by controlling the preparation of calcium hydrogen orthosphate raw mix ingredient, said method comprising:

a. precipitating calcium hydrogen orthophosphate dihydrate crystals from a fluid formed by mixing a calcium chloride solution with a diammonium phosphate solution;
b. separating said precipitated di-hydrate crystals from the remainder of said fluid;
c. compacting said di-hydrate crystals by centrifuging, wherein said centrifuging subjects said crystals to a force of about 120–800 times the force of gravity for 5–200 seconds, said separating and compacting occurring concurrently;
d. deagglomerating said compacted crystals, wherein said deagglomeration is performed by high shear mechanical stirring of a slurry comprising said di-hydrate crystals and water, and the weight ratio of di-hydrate crystals to water is about 0.6–1.5, and said mechanical agitation is performed for a sufficient time to provide a distinct lessening of viscosity during said agitation;
e. converting said di-hydrate crystals into anhydrous calcium hydrogen orthophosphate crystals;
f. preparing a raw mix comprising said anhydrous calcium hydrogen orthophosphate crystals; and
g. firing said raw mix to form said halophosphate phosphor.

3,940,344

METHOD OF PRODUCING ACTIVATED CARBONS FROM PETROLEUM HEAVY MATERIALS IN A REACTION SOLVENT WITH A SULFONATING AGENT

Akira Yokogawa, Kasukabe; Mitsuyuki Mitooka, and Kenji Shima, both of Soka, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Sept. 13, 1973, Ser. No. 397,208
Claims priority, application Japan, Sept. 14, 1972, 47-92551
Int. Cl.² C01B 31/12, 31/10
U.S. Cl. 252—422 **32 Claims**

1. A method of producing a granular activated carbon from a petroleum heavy oil or heavy residue which is solid at room temperature or liquid having a kinematic viscosity higher than 100 centistokes at 50°C and contains more than 70% by weight of carbon and not more than 0.1% by weight of total metal content, which process comprises adding a liquid, organic reaction medium material which can dissolve or disperse said petroleum heavy oil or heavy residue and is selected from the group consisting of halogenated lower aliphatic compounds, lower fatty acids, lower amides, dioxane, carbon disulfide and benzene into said petroleum heavy oil or heavy residue in an amount of 5 to 20 times by weight the amount of said petroleum heavy solid or heavy residue therein; adding a sulfonating agent capable of sulfonating said petroleum heavy oil or heavy residue into the resulting mixture in an amount of 0.2 to 20 times by weight the amount of said petroleum heavy oil or heavy residue; reacting the resulting mixture at a temperature of about 50° to about 155°C for from 30 minutes to 10 hours to conduct simultaneously sulfonation, oxidation and dehydro-poly-condensation reactions with said heavy oil or heavy residue, whereby said petroleum heavy oil or heavy residue is converted into a granular carbonized material which is not softened by an activation treatment; separating said liquid, organic reaction medium material and residual sulfonating agent from the carbonized material produced and activating the thus obtained carbonized material.

9. The method as claimed in claim 1, wherein said sulfonating agent is a complex salt obtained by reacting sulfuric trioxide with a compound selected from the group consisting of pyridine, dioxane, trimethylamine, dimethylaniline, thioxane, bis-(2-chloroethyl)ether, 2-methylpyridine, quinoline, dimethylformamide and triester phosphate, or a complex salt obtained by reacting chlorosulfonic acid with a compound selected from the group consisting of diethylether, dioxane and dimethylformamide.

32. The method as claimed in claim 1, wherein said sulfonating agent is selected from the group consisting of fluorosulfonic acid, sulfoallyl chloride, sulfamic acid, an acyl sulfate and an alkyl sulfate.

3,940,345

OLEFINE POLYMERIZATION CATALYST

Anthony David Caunt, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 268,505, July 3, 1972, abandoned. This application June 4, 1973, Ser. No. 367,002
Claims priority, application United Kingdom, July 13, 1971, 32856/71; June 9, 1972, 27010/72; Feb. 19, 1973, 7987/73
Int. Cl.³ B01J 27/14, 27/16, 31/12, 31/14
U.S. Cl. 252—429 B **28 Claims**

1. An olefine polymerisation catalyst consisting essentially of

1. one molecular proportion of a solid halide of titanium, vanadium or zirconium wherein the metal has a valency below its maximum,

2. from 0.05 up to 20 molecular proportions of at least one compound selected from the group consisting of Grignard reagents which are substantially ether free, $Mg[Al(C_2H_5)_4]_2$, $Mg(C_6H_5)_2$, lithium aluminium tetraalkyls, aluminium hydrocarbyl halides, aluminium hydrocarbyl sulphates, aluminium hydrocarbyl oxyhydrocarbyls, aluminium trihydrocarbyls and dihydrocarbyl aluminium hydrides, and
3. from 0.01 up to 10 molecular proportions of at least one phosphorus compound of the formula

$R_{3-n}P(Q)(E\text{-}Z\text{-}G)_n$

wherein

R is halogen, hydrocarbyl group, pyridyl, pyrrolyl, pyrrolidyl, piperidyl group, the group $-NR'_2$ or $-OR'$,

E is —O—, —S—, or $-NR'-$;

Z is a bivalent hydrocarbyl group such that E and G are separated by not more than 3 carbon atoms;

G is $-OR'$, $-SR'$, $-NR'_2$, $-PR'_2$, a pyridyl radical, a quinolyl radical, an isoquinolyl radical, a furyl radical or a tetrahydrofuryl radical;

R′ is a hydrocarbyl group;

Q is an oxygen or sulphur atom; and

n is 1, 2, or 3, and wherein the amount of component (3) is not greater than the amount of component (2).

3,940,346

SUPPORTED MOLYBDENUM OR TUNGSTEN OXIDES TREATED WITH ORGANOALUMINUM COMPOUNDS AS CATALYSTS

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 14, 1969, Ser. No. 816,052

Int. Cl.² B01J *31/14*

U.S. Cl. 252—430 **16 Claims**

1. As a composition of matter, a catalyst consisting essentially of an admixture of a composite of (*a*) molybdenum oxide or tungsten oxide associated with a suitable support material, said composite having been activated in flowing air at a temperature of from about 500°F to about 1600°F, and (*b*) at least one organoaluminum compound of the formula R_aAlX_b wherein R is a saturated aliphatic or aromatic hydrocarbon having up to 20 carbon atoms; X is chlorine, bromine, iodine or fluorine, *a* is an integer of at least 1; *b* is 0, 1 or 2; and the total of *a* and *b* is 3, wherein the (*a*) component of the catalyst is contacted with excess nitric oxide or nitrosyl halide, or with a sufficient amount of an alkali or alkaline earth metal hydroxide or carbonate to provide from about 0.005 to about 5 weight percent of said alkali or alkaline earth metal hydroxide or carbonate prior to contact with (*b*) and subsequent to being subjected to high temperature; and wherein the molar ratio of (*b*) to (*a*) is in the range of from about 0.005:1 to 20:1 mols of (*b*) per mol of molybdenum or tungsten oxide present in (*a*).

11. As a composition of matter, a catalyst consisting essentially of an admixture of (*a*) a composite of molybdenum oxide or tungsten oxide associated with a suitable support material, said composite having been activated in flowing air at a temperature of from about 500°F to about 1600°F, and (*b*) at least one organoaluminum halide compound having the formula R_aAlX_b wherein R is a saturated aliphatic or aromatic hydrocarbon having up to 20 carbon atoms; X is chlorine, bromine, iodine, or fluorine; *a* is 1 or 2; *b* is 1 or 2; and the total of *a* and *b* is 3; and wherein the molar ratio of (*b*) to (a) is in the range of from about 0.005:1 to about 20:1 mols of (*b*) per mol of molybdenum or tungsten oxide contained in (*a*).

3,940,347

CALCIUM TUNGSTATE X-RAY PHOSPHORS AND METHOD FOR PREPARING SAME

Sixdeniel Faria, Towanda, and Lyle K. Williams, Wysox, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 264,760, June 21, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,141

Int. Cl.² C09K *11/40*

U.S. Cl. 252—301.5 **6 Claims**

1. A calcium tungstate X-ray phosphor composition consisting essentially of a calcium tungstate host and from about 50 to about 200 parts per million, based upon the weight of calcium tungstate host, of vanadium as a dopant, said composition exhibiting no detectable persistence.

3. A process for producing a calcium tungstate phosphor suitable for x-ray intensifying screens, said process comprises

a. forming an aqueous reaction media consisting essentially of water-soluble calcium source and a water-soluble tungstate source, said calcium to tungsten ratio being greater than 1 in said solution
b. maintaining a temperature in said solution above about 80°C for at least 60 minutes to form a solid calcium tungstate precipitate having a Ca/W ratio of greater than 1,
c. separating the solid calcium tungstate,
d. adding from about 50 to about 200 ppm of a vanadium source and a fluxing material of potassium chloride,
e. heating said calcium tungstate to a temperature between about 700°C and 1150°C for a time sufficient to form a phosphor composition, and
f. washing said composition with water to remove any residual water-soluble contaminants.

3,940,348

REACTION CATALYST FOR THE ELIMINATION OF OXYHYDROGEN GAS IN LEAD-ACID STORAGE BATTERIES

Norbert Lahme, Hoppecke, and Gunter Sassmannshausen, Brilon, both of Germany, assignors to Accumulatorenwerk Hoppecke, Cologne, Germany

Filed Mar. 15, 1973, Ser. No. 341,577

Claims priority, application Germany, Mar. 18, 1972, 2213219

Int. Cl.² B01J *21/04, 23/56*

U.S. Cl. 252—466 PT **8 Claims**

1. A unitary catalyst element for catalytically recombining into water a gas mixture of oxygen and hydrogen formed during operation of a lead-acid storage battery, comprising a single elongated catalyst carrier body in the form of a permeable coherent solid; an active metallic catalyst material of the platinum group carried on the surface of the permeable catalyst carrier body; and an axially disposed core member of highly heat conductive material enclosed within said catalyst carrier body.

3,940,349

COMPOSITIONS AND PROCESS FOR MAKING RIGID PLASTIC FOAMS OF MODIFIED VINYL ESTER RESINS AND SILICONE COMPOUNDS

John M. Corbett, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

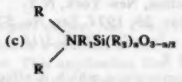
Continuation of Ser. No. 427,758, Dec. 26, 1973. This application Dec. 5, 1974, Ser. No. 529,884

Int. Cl.² C08J *9/00, 9/30*

U.S. Cl. 260—2.5 S **14 Claims**

1. A non-aqueous thermosettable composition for making rigid plastic foams comprising a liquid resin consisting of 30 to 70 weight percent of a vinyl ester resin having pendant phthalate, isophthalate or terephthalate half ester groups and about 70 to 30 weight percent of a copolymerizable vinyl monomer, wherein said vinyl ester resin is prepared by reacting about equivalent amounts of an unsaturated monocarbox-

ylic acid and a polyepoxide and esterifying at least about half of the hydroxyl groups formed from the acid-epoxide reaction to said half ester groups, and as a frothing agent at least about 1 pph of a copolymer containing (a) SiO_2 units, (b) $(CH_3)_3SiO_{1/2}$ units and



units wherein the ratio of (b) units to the sum of the (a) and (c) units is about 0.4:1 to 1.2:1 and wherein n has a value of 0 to 2, R_2 is an alkyl group having 1 to 6 carbon atoms, R_1 is an alkylene radical of 1 to 6 carbon atoms and R is hydrogen, an alkyl radical of 1 to 6 carbon atoms or an aminoalkyl radical having 2 to 6 carbon atoms.

3,940,350

MOULDING COMPOSITIONS BASED ON UNSATURATED POLYESTERS, COPOLYMERISABLE VINYL MONOMERS AND CELLULOSE ESTERS

Bernhard Hess, Kapellen; Karl Raichle, Krefeld-Bockum; Hansjochen Schulz-Walz, Meerbusch; Bernd Peltzer; Ludwig Bottenbruch, both of Krefeld-Bockum, and Leonard Goerden, Grefrath, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Jan. 14, 1974, Ser. No. 433,347

Claims priority, application Germany, Jan. 20, 1973, 2302842

Int. Cl.² C08L *1/14, 67/06*

U.S. Cl. 260—16 **4 Claims**

1. A mixture containing

A. 20–70% by weight of a non-crystallizing polyester which is the condensation product of an α,β-unsaturated dicarboxylic acid and a polyhydroxy compound and has an acid number between 10 and 100 and a hydroxyl number between 10 and 150,

B. 20–70% by weight of a copolymerizable vinyl monomer and

C. 3–30% by weight of cellulose acetobutyrate, cellulose acetopropionate or a mixture thereof,

said non-crystallizing polyester having

1. a styrene compatibility of between 50% by weight and 90% by weight of unsaturated polyester or

2. a styrene compatibility of between 35% by weight and 90% by weight of unsaturated polyester and a content of between 0.50 and 0.20 equivalent of α,β-ethylenically unsaturated dicarboxylic acid radicals per 100 g. of unsaturated polyester,

said percentages by weight of said (A), (B) and (C) being based on the total weight of (A), (B) and (C).

3,940,351

POLYMERIZATION OF CARBOXYLIC ACID MONOMERS AND ALKYL ACRYLATE ESTERS IN CHLOROFLUOROETHANE

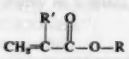
Robert K. Schlatzer, Jr., Chagrin Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 485,125, July 2, 1974. This application Mar. 11, 1975, Ser. No. 557,295

Int. Cl.² C08L *5/00*

U.S. Cl. 260—17.4 SG **10 Claims**

1. A process for preparing copolymers of unsaturated copolymerizable carboxylic acid monomers and acrylic acid esters of the formula



wherein R contains 10 to 30 carbon atoms and R′ is hydrogen or methyl, comprising conducting copolymerization of from 95 to 50 weight percent of said acid monomer and 5 to 50 percent of said ester monomer in the presence of a haloalkane containing 1 to 2 carbon atoms and at least 4 halogen atoms.

3,940,352

PROCESS FOR PREPARATION OF LIGNIN RESIN

Axel Bengt Wennerblom, Pitea, and Alf Hugo Karlsson, Njurunda, both of Sweden, assignors to AB Casco, Stockholm, Sweden

Filed Feb. 21, 1974, Ser. No. 444,447

Claims priority, application Sweden, Feb. 21, 1973, 7302412

Int. Cl. C08g *14/14;* **C08h** *5/02*

U.S. Cl. 260—17.5 **7 Claims**

1. A two-step process for the preparation of a condensation product composed of lignosulfonate, phenol and formaldehyde,

the first step being an acid step wherein sulfite waste liquor is condensed at a temperature of at least 80°C with phenol and formaldehyde, at a pH of 0.2 – 4.0,

the second step being alkaline and a continuation of said condensation at a temperature of at least 60°C after addition of more formaldehyde and alkali to a pH exceeding 7.

3,940,353

PIGMENT DISPERSIONS AND LACQUERS CONTAINING COPOLYMER OF ISOBORNYL METHACRYLATE

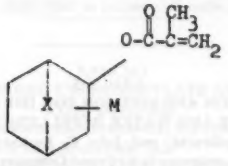
Richard Martorano, Marlton, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 241,467, April 15, 1972, abandoned, which is a continuation of Ser. No. 60,604, Aug. 3, 1970, abandoned. This application May 8, 1974, Ser. No. 468,942

Int. Cl.² C09D *3/48, 3/66, 3/81*

U.S. Cl. 260—22 CB **13 Claims**

1. A lacquer of a blend of (A) a film-forming resin selected from natural oil modified alkyd resin, methacrylated alkyd resin, styrenated alkyd resin, cellulose ester resin, vinyl resin, or chlorinated rubber, with (B) an organic solvent solution of a copolymer of about 40 to 60% by weight of a compound of the formula



where X is selected from the group consisting of $-C_6H_8-$, $-CH(CH_3)-$, and $-C(CH_3)_2-$, and M is selected from the group consisting of a hydrogen atom and at least one methyl group, and 40 to 60% by weight of styrene, vinyl toluene, or at least one ester of acrylic acid or methacrylic acid and at least one aromatic, monocyclic aliphatic, or open chain aliphatic alcohol or alkoxy alcohol having from 1 to about 18 carbon atoms, said copolymer having an average molecular weight of from 1,000 to 8,500, the weight ratio of (A) to (B) being between 9:1 and 1:9.

2. The composition of claim 1 in which said compound is isobornyl methacrylate.

3,940,354

CEPHALOSPORAN COMPOUNDS

Jacques Martel, Bondy; René Heymes, Romainville, and André Lutz, Strasbourg, all of France, assignors to Roussel-UCLAF, Paris, France

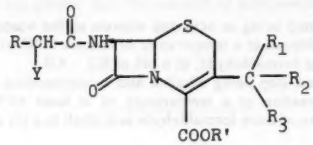
Filed Jan. 25, 1974, Ser. No. 436,502

Claims priority, application France, Jan. 31, 1973, 73.03315

Int. Cl.² C07D *501/18*

U.S. Cl. 260—243 C 4 Claims

1. A compound selected from the group consisting of cephalosporan compounds of the formula



in the form of racemic mixtures or optically active isomers or in form of their cis or trans isomers or mixtures thereof wherein R is phenyl substituted with one hydroxyl, R′ is selected from the group consisting of hydrogen and R″, R″ is an ester group easily removable by acid hydrolysis or hydrogenolysis selected from the group consisting of alkyl of of 1 to 6 carbon atoms optionally substituted by at least one chlorine and aralkyl of 7 to 15 carbon atoms, R_1 and R_2 are alkyl of 1 to 3 carbon atoms, R_3 is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, Y is selected from the group consisting of amino and Y′, Y′ is hydrogen and NHCOOZ, Z is straight or branched alkyl of 1 to 5 carbon atoms and their non-toxic, pharmaceutically acceptable addition salts with organic and inorganic acids and bases where appropriate with the proviso that when Y is amino, R′ is hydrogen and when Y is amino or NHCOOZ, R is phenyl.

3,940,355

COMPOSITION AND METHOD FOR IMPARTING FIRE RESISTANCE AND WATER REPELLENCY TO FABRIC

John W. Engelbrecht, and John C. Lockard, both of New Haven, Mo., assignors to Kellwood Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 416,950, Nov., 1973, which is a continuation of Ser. No. 268,041, June 30, 1972. This application July 22, 1974, Ser. No. 490,485

Int. Cl.² C08L *91/00, 91/06, 91/08*

U.S. Cl. 260—28.5 AV 12 Claims

1. A coating composition useful for imparting fire resistance and water-repellency to fabric comprising between about 5% and about 23% by weight of a liquid chlorinated paraffin, between about 20% and about 40% by weight of a resinous chlorinated paraffin, between about 4% and about 12% by weight of a copolymer of ethylene and vinyl acetate, between about 3% and about 18% by weight of a fire retardant, and up to about 15% by weight of an organic solvent.

3,940,356

ICE RELEASE AGENTS CONSISTING OF PSEUDO-PLASTIC COMPOSITIONS OF CROSSLINKED POLYACRYLIC ACID IN WATER-POLYGLYCOL MIXTURE

Peter G. Byrnes, Bloomfield Hills, Mich., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,325

Int. Cl.² C09K *3/18*

U.S. Cl. 260—29.6 E 8 Claims

1. Ice release composition which is effective on non-horizontal substrate surfaces comprising:

a. a mixture of an alkylene glycol having two to three carbon atoms and water in a glycol:water weight ratio of about 20:80 to about 90:10.

b. about 0.05 to about 1.0 parts of crosslinked polyacrylic acid per 100 parts of (a);

c. sufficient base to neutralize the crosslinked polyacrylic acid, said base selected from the class consisting of alkali metal hydroxides, ammonium hydroxide, alkyl amines having 4 to 12 carbon atoms, alkanolamines having 2 to 12 carbon atoms and morpholine; and

d. about 50 to about 100 parts of an alkanol, having one to three carbon atoms, per 100 parts of the combination of (a), (b) and (c).

3,940,357

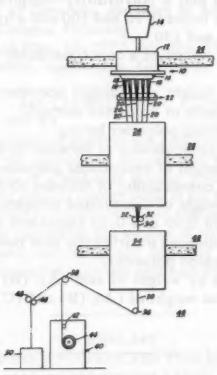
COATING AND COMBINED SIZING AND COATING COMPOSITION FOR GLASS FIBERS

Dennis M. Fahey, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 314,284, Dec. 12, 1972, which is a continuation-in-part of Ser. No. 93,937, Dec. 1, 1970, abandoned. This application May 6, 1974, Ser. No. 467,333

Int. Cl.² C08L *61/06*

U.S. Cl. 260—29.3 12 Claims



1. In a glass fiber coating composition useful in preparing glass fibers for reinforcing elastomers comprising an aqueous dispersion of an elastomeric latex selected from the group consisting of natural and synthetic rubber latices and a rubber adhesive, the improvement comprising, as said adhesive, a zinc salt in an amount from 0.01 to 5 percent by weight based on the total weight of the coating composition, said zinc salt being capable of being complexed with ammonia and having a solubility constant of not less than 1×10^{-5}; and having present in the dispersion sufficient ammonia for complexing the zinc salt present.

3,940,358

NON-HYDRAULIC GROUTING COMPOSITION OF A WATER RESISTANT POLYMER EMULSION AND A MIXTURE OF A COARSE AND A FINE FILLER

Frank E. Bernett, Yardley, Pa., and Robert J. Kleinhans, Kingston, N.J., assignors to Tile Council of America, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 270,239, Sept. 15, 1972, abandoned, which is a division of Ser. No. 10,018, Feb. 9, 1970, abandoned. This application Dec. 13, 1972, Ser. No. 314,552. The portion of the term of this patent subsequent to Dec. 19, 1989, has been disclaimed.

Int. Cl.[2] C08L 47/00

U.S. Cl. 260—29.6 R 16 Claims

1. A non-hydraulic grouting composition which consists essentially of

a water-resistant polymer emulsion having a solids content of at least 40% by weight of the emulsion wherein the polymer is a polymer of an ethylenically unsaturated monomer;

10% to 35% by weight of the total composition of a fine filler having an average particle size less than 140 mesh;

at least 50% by weight of the total composition of a coarse filler characterized by an average particle size wherein not more than 10% passes a 140 sieve and none is retained on a number 6 sieve and an American Foundry Society grain Fineness Number less than 100 but greater than 10;

wherein the total composition has a viscosity of 50,000 to 2,000,000 cps, a total fine and coarse filler content of from about 70% to 90% by weight, and a total aqueous volatile component content of from 5% to 15% by weight.

3,940,359

SOIL-REPELLENT COATING COMPOSITIONS

William John Chambers, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 8, 1974, Ser. No. 468,199

Int. Cl.[2] C08L 27/12

U.S. Cl. 260—29.6 F 8 Claims

1. An aqueous dispersion containing a dispersant and 0.5% to 50% by weight of solid particles having a size less than 1μ, said particles consisting essentially of

a. 4 parts by weight of hydrous metal oxide particles,

b. from 1 to 16 parts by weight of polymer particles containing $-CF_3$ groups in an amount of from 0.5% to 92% by weight of said polymer, said polymer being a polymer of acrylic or methacrylic acid esterified with a fluorinated alcohol containing 2 to 12 carbon atoms and 1 to 3 $-CF_3$ groups, and having a Knoop hardness in bulk of at least 5.

3,940,360

SILANE CONTAINING COATING COMPOSITIONS

Charles Hobert Carder, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 12, 1974, Ser. No. 441,904

Int. Cl.[2] C08K 5/54, 9/06

U.S. Cl. 260—29.1 SB 9 Claims

1. A polymerizable acrylyl coating composition containing a polymerizable monomer, oligomer, or polymer having a methacrylyl, acrylyl, methacrylamide, acrylamide, methacrylonitrile, or acrylonitrile moiety in the molecule, and containing from 0.1 to 10 weight percent of said composition of a silane compound of the formula:

$$R-Si-(OR')_3$$

wherein

R is vinyl,

alkyl of from 1 to 8 carbon atoms,

phenyl,

$CH_2=CZCOOR''-$,

$[CH_2=CZCOOH]_2 \cdot H_2NR''-$ or

HOOCCH=CHCONHR'';

Z is hydrogen or methyl;

R'' is divalent alkylene of from 1 to 6 carbon atoms;

R' is alkoxy of from 1 to 8 carbon atoms, alkoxyalkyloxy having a total of 8 carbon atoms or lower acyl having up to 5 carbon atoms.

3,940,361

DISPERSIONS OF STYRENE/ACRYLONITRILE COPOLYMERS

Eugene G. Sommerfeld, Penn Valley, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 11, 1972, Ser. No. 296,639

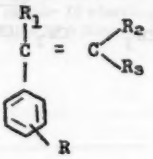
Int. Cl.[2] C08K 5/05, 5/06, 5/07, 5/15

U.S. Cl. 260—30.4 N 12 Claims

1. A composition comprising

A. 75–100 percent, by weight of solids, of a particulate copolymer of

1. 25–75 percent, by weight, of at least one monomer represented by the structure



where R, R_1, R_2 and R_3 are hydrogen or an alkyl radical of 1–5 carbon atoms;

and

2. 25–75 percent, by weight, of at least one ethylenically unsaturated nitrile monomer,

the total of (1) and (2) being 100 percent;

and

B. an organic liquid carrier comprising

1. 20–80 percent, by weight, of ethylene carbonate or propylene carbonate,

and

2. 20–80 percent, by weight, of an alkanol of 1–4 carbon atoms, acetone, methylethyl ketone, an ether alcohol, an ester of an ether alcohol or tetrahydrofuran.

3,940,362

CROSS-LINKED CYANOACRYLATE ADHESIVE COMPOSITIONS

Wendell C. Overhults, East Brunswick, N.J., assignor to Johnson & Johnson, East Brunswick, N.J.

Filed May 25, 1972, Ser. No. 257,036

Int. Cl.[2] C08F 236/12; C08K 3/20, 3/36; C08L 35/04

U.S. Cl. 260—42.16 26 Claims

1. An adhesive composition comprising a cement portion and a catalyst portion, the cement portion comprising from 5 to 95% by weight of a monomeric ester of an α-cyanoacrylic acid and from 95 to 5% by weight of a difunctional monomer diester of an acid from the group consisting of acrylic and methacrylic acid and a polyfunctional alcohol having at least two esterifiable hydroxy groups, and the catalyst portion comprising from about 2 to 15 parts by weight of a free radical catalyst for each hundred parts by weight of the total cement portion, and an amine activator therefor in the amount of from 5 to 150 mole percent of the free radical catalyst.

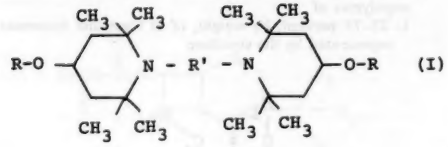
3,940,363

PIPERIDINE DERIVATIVES AND THEIR USE AS STABILIZERS

Keisuke Murayama; Syoji Morimura; Takao Yoshioka, and Tomoyuki Kurumada, all of Hiro, Japan, assignors to Sankyo Company Limited, Japan

Filed July 19, 1973, Ser. No. 380,547
Claims priority, application Japan, July 27, 1972, 47-75263
Int. Cl.² C08K 5/00
U.S. Cl. 260—45.8 N 12 Claims

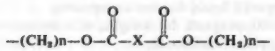
1. A synthetic polymer composition stabilized against photo- and thermal-deterioration wherein there is incorporated, in a sufficient amount to prevent said deterioration, at least one compound selected from the group consisting of the compounds having the formula



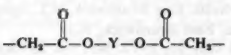
(I)

wherein

R′ represents an alkylene group which may be interrupted with an oxygen or sulfur atom, an alkenylene group, an alkynylene group, an aralkylene group, an aliphatic diacyl group, a group of the formula

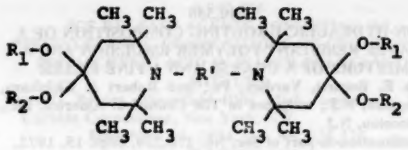


in which *n* is an integer of 1 or 2 and X is an alkylene group, or *o*-, *m*- or *p*-phenylene group or the carbon atoms of CO groups may be directly joined in the absence of X or a group of the formula



in which Y is an alkylene group or *o*-, *m*- or *p*-phenylene group; and

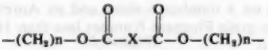
R represents hydrogen atom, an alkyl group, a cycloalkyl group, an aralkyl group, an aryl group, an alkoxycarbonylalkenyl group, an aliphatic, aromatic or heterocyclic monoacyl group, a N-substituted carbamoyl group, a N-substituted thiocarbamoyl group or a monovalent radical derived from an oxoacid, the compounds having the formula



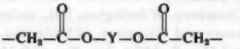
(II)

wherein

R′ represents an alkylene group which may be interrupted with an oxygen or sulfur atom, an alkenylene group, an alkynylene group, an aralkylene group, an aliphatic diacyl group, a group of the formula

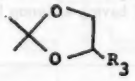


in which n is an integer of 1 or 2 and X is an alkylene group, or *o*-, *m*- or *p*-phenylene group or the carbon atoms of CO groups may be directly joined in the absence of X or a group of the formula

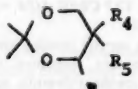


in which Y is an alkylene group or *o*-, *m*- or *p*-phenylene group;

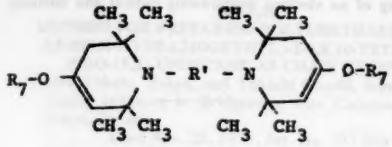
R_1 and R_2 individually represent a lower alkyl group or they jointly represent, together with the oxygen atoms, a group of the formula



in which R_3 is hydrogen atom, a lower alkyl group or hydroxymethyl or a group of the formula



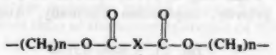
in which R_4 and R_5 may be the same or different and each represents hydrogen atom, a lower alkyl group or hydroxymethyl group and R_6 is hydrogen or a lower alkyl group, the compounds having the formula



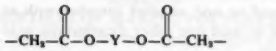
(III)

wherein

R′ represents an alkylene group which may be interrupted with an oxygen or sulfur atom, an alkenylene group, an alkynylene group, an aralkylene group, an aliphatic diacyl group, a group of the formula

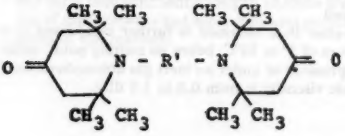


in which *n* is an integer of 1 or 2 and X is an alkylene group, or *o*-, *m*- or *p*-phenylene group or the carbon atoms of CO groups may be directly joined in the absence of X or a group of the formula



in which Y is an alkylene group or *o*-, *m*- or *p*-phenylene group; and

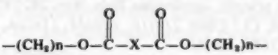
R_7 represents an alkyl group or an aralkyl group, and the compounds having the formula



(IV)

wherein

R′ represents an alkylene group which may be interrupted with an oxygen or sulfur atom, an alkenylene group, an alkynylene group, an aralkylene group, an aliphatic diacyl group, a group of the formula



in which *n* is an integer of 1 or 2 and X is an alkylene group, or *o*-, *m*- or *p*-phenylene group or the carbon atoms of CO groups may be directly joined in the absence of X or a group of the formula

in which Y is an alkylene group or *o*-, *m*- or *p*- phenylene group.

3,940,364

NAPHTHOFURANYLNAPHTHOL STABILIZERS

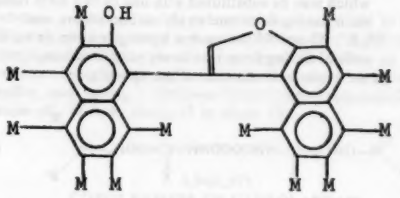
Robert W. Layer, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 2, 1975, Ser. No. 573,818

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.8 A **22 Claims**

1. A stabilized composition comprising 100 parts by weight of an organic material subject to the deleterious effects of oxygen, heat and light and from about 0.1 part to about 10 parts by weight of at least one naphthofuranylnaphthol having the formula



wherein each M is hydrogen, halogen, or an alkyl group containing from one to eight carbon atoms.

18. A composition of claim **15** wherein said naphthofuranylnaphthol is 1-[1-naphtho(2,1-b)furanyl]-2-naphthol.

3,940,365

MOULDING COMPOSITION BASED ON POLY(OXYMETHYLENE)

Hans-Hermann Grossmann, Oberems, Taunus; Karlheinz Burg, and Gunter Sextro, both of Naurod, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 26, 1974, Ser. No. 509,742

Claims priority, application Germany, Sept. 28, 1973, 2348808

Int. Cl.² C08K *5/20*, *5/21*

U.S. Cl. 260—45.9 P **5 Claims**

1. A moulding composition based on poly(oxymethylene) and consisting essentially of a mixture of

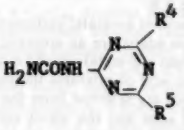
A. 99.9 to 95 weight percent of a linear poly(oxymethylene),

B. 0.05 to 2.5 weight percent of at least one phenolic oxidation stabilizer, and

C. 0.05 to 2.5 weight percent of at least one compound having a nucleating effect and selected from

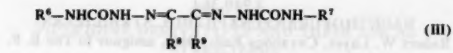
a. a urea having the formula

(I)



(II)

or



(III)

wherein x, y and z are each zero or 1 and the sum of x, y and z is 1 or 2,

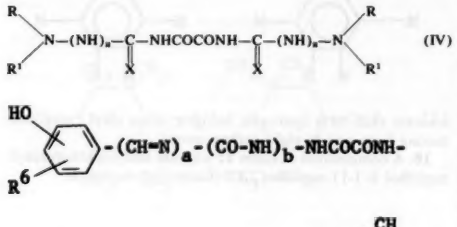
R and R^1 are each a hydrogen atom, an alkyl radical having from one to six carbon atoms or a phenyl radical,

R^2 and R^3 are each a hydrogen atom or an alkyl radical having one, two or three carbon atoms,

R^4 and R^5 are each an alkyl radical having from one to six carbon atoms or an amino or ureido group, both of which may be substituted with one or two alkyl radicals each having from one to six carbon atoms, and

R^6, R^7, R^8 and R^9 are each a hydrogen atom or an alkyl radical having from one to six carbon atoms,

b. an oxalic acid diamide of the formula



(IV)

(V)

or

(VI)

wherein n is zero or 1,

the sum of a and b is 1,

c is 1, 2 or 3, and

d is zero, or c is zero and d is 1,

X is an oxygen atom of an imino group, R and R^1 are each a hydrogen atom, an alkyl radical having from one to six carbon atoms or a phenyl radical, and

R^6 is a hydrogen atom or an alkyl radical having from one to six carbon atoms, and

c. an azodicarboxylic amide of the formula

wherein R^6 and R^7 are each a hydrogen atom or an alkyl radical having from one to six carbon atoms.

3,940,366

FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1973, Ser. No. 429,120

Int. Cl.² C08K 5/42

U.S. Cl. 260—45.9 R **13 Claims**

1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of a metal salt of a monomeric substituted aromatic sulfonic acid or mixtures thereof, and wherein said metal salts thereof are selected from the group consisting of the alkali metal salts and the alkali earth metal salts, and mixtures thereof, and said substituent on the metal salts of the substituted aromatic sulfonic acid is selected from the group consisting of an electron withdrawing radical and mixtures thereof.

3,940,367

PREPARATION OF HIGH MOLECULAR POLYESTERS OF 1,4-BUTANEDIOL

Herbert Pelousek, Dormagen; Alfred Horbach; Ludwig Bottenbruch, both of Krefeld-Bockum, and Rudolf Binsack, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 6, 1974, Ser. No. 495,190

Claims priority, application Germany, Aug. 10, 1973, 2340559

Int. Cl.² C08G 63/34

U.S. Cl. 260—45.95 R **7 Claims**

1. A process for the condensation of diols and dicarboxylic acid dialkyl esters wherein 1,4-butanediol or its mixture with at most 10 mol percent of another diol is condensed with a member selected from the group consisting of dialkyl esters of terephthalic acid, dialkyl esters of isophthalic acid and mixtures thereof or said selected member with at most 10 mol percent of at least one other dicarboxylic acid dialkyl ester, and wherein

a. 1 mol of the dicarboxylic acid dialkyl ester is transesterified with 1.05 to 1.9 mols of the diol in the presence of 0.01 to 0.4 percent by weight of titanic acid tetraalkyl ester based on the dicarboxylic acid dialkyl ester, at a pressure of 2–10 bars and a temperature of 180° to 230°C.,

b. the trans-esterification product is polycondensed in the melt at 230°-300°C. under reduced pressure of 0.1 to 5 mm Hg and

c. the polyester thus obtained is further condensed at a temperature of 5° to 50°C. below its melting point, under reduced pressure or under an inert gas atmosphere, until its intrinsic viscosity is from 0.6 to 1.9 dl/g.

3,940,368

ACRYLONITRILE COPOLYMERS SUITABLE FOR MAKING FLAME-RESISTING FIBERS

Luciano Console, Mirano-Venice; Ferdinando Bencini, San Donato Milanese, and Enzo Chiellini, Rosignano Solvay, all of Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Filed Nov. 19, 1974, Ser. No. 525,141

Claims priority, application Italy, Nov. 28, 1973, 31753/73

Int. Cl.² C08F 214/10, 220/44, 216/14, 220/46

U.S. Cl. 260—63 HA **10 Claims**

1. A copolymer suitable for making self-extinguishing fibers, consisting essentially of at least 50 wt.% of acrylonitrile, from 2 to 30 wt.% of vinyl or vinylidene chloride, from 0 to 10 wt.% of a neutral, ethylenically unsaturated, non-halogenated monomer and from 2 to 40 wt.% of alpha-bromoacrylonitrile.

3. A copolymer suitable for making self-extinguishing fibers, consisting essentially of at least 50 wt.% acrylonitrile, from 2 to 30 wt.% vinyl or vinylidene chloride, from 0 to 10 wt.% of a neutral, ethylenically unsaturated, non-halogenated monomer, from 2 to 40 wt.% of alpha-bromoacrylonitrile and from 0.1 to 3 wt.% of a copolymerized monomer carrying sulphonic groups.

3,940,369

METHOD FOR PREPARING POLYURETHANES USING 3,9-BIS(2-HYDRAZIDOETHYL)-2-4,8,10-TETRAOXASPIRO-[5,5]-UNDECANE AS CHAIN EXTENDER

Toshio Yukuta, Tokyo, and Takashi Ohashi, Iruma, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 25, 1974, Ser. No. 527,080
Claims priority, application Japan, Nov. 28, 1973, 48-132549
Int. Cl.² C08G 18/32; C07D 319/04
U.S. Cl. 260—75 NH 9 Claims

1. A method for preparing polyurethane which comprises reacting 3,9-bis(2-hydrazidoethyl)-2,4,8,10-tetraoxaspiro-[5,5]-undecane as a chain extender with a prepolymer having terminal isocyanate groups produced by reacting an organic polyisocyanate with hydroxyl-containing compound having a number average molecular weight ranging from 400 to 5000, the equivalent ratio of the active hydrogen of the chain extender to the isocyanate group of the prepolymer ranging from 0.8 to 1.3.

3,940,370

METHOD OF MAKING POLYUREAS

Anthony L. DiSalvo, Stamford, Conn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 31, 1975, Ser. No. 563,763
Int. Cl.² C08G 18/08, 18/71
U.S. Cl. 260—77.5 CH 5 Claims

1. Method of making a polyurea which comprises reacting an aliphatic diamine with trimethylisocyanatosilane in a closed, pressurized vessel at a temperature sufficiently high and for a time sufficiently long to produce a substantial quantity of said polyurea and separating said polyurea from by-products of the reaction.

3,940,371

DIAMON DISULFIDE CURATIVES FOR POLYURETHANES

Leslie Catron Case, 14 Lockeland, Winchester, Mass. 01890

Filed June 6, 1974, Ser. No. 476,932
Int. Cl.² C08G 18/32
U.S. Cl. 260—77.5 AM 38 Claims

1. A cured polyurethane composition comprising the reaction product of (A) an organic polyisocyanate, (B) a polymeric diol, and (C) an organic diamino disulfide selected from the group consisting of

a. diamino diphenyl disulfides with amino groups located in different phenyl radicals and having the amino groups located in positions ortho to the disulfide group,

b. diamino dinaphthyl disulfides having melting points below 150° C., and with amino groups located in different naphthyl radicals,

c. organic diamino disulfides having the structure $NH_2—Ar—S—S—R'—NH_2$ or $NH_2—R'—S—S—R'—NH_2$ in which Ar is an aryl radical and R' is a tertiary aliphatic or cycloaliphatic radical in which the amino group is attached to the tertiary carbon atom, and

d. organic diamino aryl disulfides in which one of the radicals attached to the disulfide group is a diaminoaryl radical and the other radical attached to the disulfide group is either an aryl or a lower alkyl radical, in which said (C) may have been reacted simultaneously with said (A) and (B), or in which said (A) and (B) may have been reacted together to form a polyurethane prepolymer before reaction with said (C).

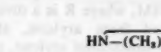
3,940,372

MODIFIED MOLECULAR WEIGHT OF POLYLACTAMS

William L. Hergenrother, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 12, 1974, Ser. No. 496,417
Int. Cl.² C08G 69/24, 81/00
U.S. Cl. 260—78 L 29 Claims

1. A molecular weight modified nylon, comprising:
anionically polymerized lactam monomers having the formula



wherein n is from 2 to 15, and containing from 0.001 to about 30 mole percent based upon the lactam of a hydrocarbon compound lacking any active hydrogen attached to an atom selected from the group consisting of nitrogen, oxygen and sulfur, and having a McEwen-Streitwieser-Applequist-Dessy scale pK_a of from about 15 to about 29.

3,940,373

COPOLYAMIDE OF CAPROLACTAM

Toshio Muraki; Yasuo Miura, and Hiroshi Kodama, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 27, 1974, Ser. No. 455,056
Claims priority, application Japan, Apr. 14, 1973, 48-41808
Int. Cl.² C08G 69/14, 69/46
U.S. Cl. 260—78 L 2 Claims

1. A copolyamide which is soluble in methanol at room temperature to give a stable solution, said copolyamide being obtained by copolymerizing a three-component system consisting essentially, in the proportions defined by the triangular coordinates in the area defined by points a, b, c, d, e and f of the accompanying drawing, of the system consisting essentially of 20 – 55 percent of ε-caprolactam; 5 – 40 percent of a salt of hexamethylenediamine and adipic acid; and 20 – 60 percent of a salt of 1,3-cyclohexanebis (methylamine) and adipic acid, such proportions being expressed as percentages by weight.

3,940,374

SYNTHESIS OF POLYTHIOL POLYMER INTERMEDIATES FROM POLYUNSATURATED HYDROCARBONS

Alexis A. Oswald, Mountainside, N.J.; Wolfgang H. Mueller, Karlsruhe, Germany, and Daniel N. Hall, Summit, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 665,728, Sept. 6, 1967, Pat. No. 3,625,925. This application June 18, 1971, Ser. No. 154,627. The portion of the term of this patent subsequent to Dec. 7, 1988, has been disclaimed.
Int. Cl.² C08G 23/00
U.S. Cl. 260—79 8 Claims

1. A polythiol composition having the general formula: $(CYZ{=}CX)_d{-}Q{-}CHX{-}CYZ{-}(SR_1)_b{-}SH_{a-d}\ SH)_Q$ is a polyvalent radical selected from the group consisting of trimethylcarbinol, trimethylphosphate, trimethylol propane triformiate, triformoyl triazine, chlorosilane, silane, and cyclohexane radicals, R_1 is a radical selected from the group consisting of (1) a C_1–C_{20} divalent alkylene radical, (2) a C_8–C_{20} divalent unsaturated alkylene radical, (3) a C_8–C_{20} bis-alkylene substituted aromatic radical, (4) a C_8–C_{20} divalent aromatic radical, and (5) a C_8–C_{20} divalent organic radical containing either sulfur, oxygen or silicon in addition to carbon and hydrogen atoms, X, Y and Z are selected from the group consisting of C_1 to C_{20} alkyl radicals and hydrogen radicals, *a* varies from 3 to 4, *b* ranges from 0 to 30, and *d* varies from 0 to 1.

3,940,375

ARYLENE SULFIDE POLYMERS

Marion T. O'Shaughnessy, and Robert W. Campbell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 7, 1974, Ser. No. 521,775
Int. Cl.² C08G 75/16
U.S. Cl. 260—79.1 **8 Claims**

1. A method for producing polymers comprising:

a. contacting an alkali metal salt of a halothiophenol represented by the formula XRSM, where R is a divalent hydrocarbon radical selected from arylene, alkyl-substituted arylene, cycloalkyl-substituted arylene, and aryl-substituted arylene, the number of carbon atoms in said R group being within the range of 6 to about 20; X is halogen selected from fluorine, chlorine, bromine, and iodine; and M is an alkali metal selected from lithium, sodium, potassium, rubidium, and cesium, said contacting in an organic amide in the presence of a dihalo aromatic compound to form a composition, and

b. maintaining at least a portion of said composition at polymerization conditions to produce a polymer.

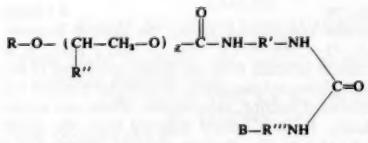
3,940,376

PERMANENTLY ANTISTATIC SHAPED STRUCTURES OF ACRYLONITRILE POLYMERS

Francis Bentz, Cologne, and Gunther Nischk, Dormagen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 25, 1974, Ser. No. 527,073
Claims priority, application Germany, Nov. 30, 1973, 2359658
Int. Cl.² C08F 28/00, 120/42, 220/42, 220/70
U.S. Cl. 260—79.3 M **5 Claims**

1. A shaped article of an acrylonitrile polymer with at least one antistatic additive, comprising (A) 85 to 99.5 % by weight of an acrylonitrile copolymer consisting of at least 60 % by weight of copolymerised acrylonitrile and (B) of 0.5 to 15 % by weight of at least one compound corresponding to the general formula (I)



(I)

in which

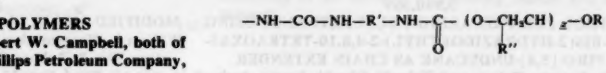
R represents a C_6–C_{18}-alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical optionally substituted by halogen or alkyl,

a is an integer from 5 to 50,

R′ represents ann alkylene, arylene, aralkylene, alkarylene, cycloalkylene radical,

R″ represents hydrogen or a methyl group,

B represents hydrogen or the group



R‴ , where B is hydrogen, represents a C_6–C_{18}-arylene radical optionally substituted by halogen or alkyl, a C_3–C_{17}-alkylene radical or a cycloaliphatic radical, and, where B has the meaning different from hydrogen, R‴ represents a C_2–C_6-alkylene radical, a C_6–C_{12}-arylene radical optionally substituted by halogen or alkyl or a cycloaliphatic radical.

3,940,377

METHOD OF ACTIVATING POLYMERS

Carl Horowitz; Leon Pinczuk, and Michael Dichter, all of Brooklyn, N.Y., assignors to Polymer Research Corporation of America, Brooklyn, N.Y.

Division of Ser. No. 105,670, Jan. 11, 1971, abandoned. This application June 19, 1972, Ser. No. 264,020
Int. Cl.² C08F 8/42, 8/36
U.S. Cl. 260—79.5 NV **8 Claims**

1. Method of activating a polymeric material, which comprises subjecting a polymeric material the surface of which contains thereon a substance selected from the goup consisting of colloidal silver and silver oxide so that strongly ionic materials can be grafted onto said surface to the action of a sulfonating agent in a solvent medium hydrocarbon, whereby said polymeric material becomes rapidly sulfonated and easily subject to reaction with ionic materials including dyes.

3,940,378

METHOD FOR MANUFACTURING OF BUTADIENE-PROPYLENE COPOLYMERS

Junji Furukawa, Kyoto; Kazuo Haga, Kodaira, and Eiichi Kobayashi, Uji, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 143,242, May 13, 1971, abandoned. This application June 12, 1974, Ser. No. 478,730
Claims priority, application Japan, May 14, 1970, 45-40546
Int. Cl.² C08F 2/06, 4/52, 36/06
U.S. Cl. 260—85.3 R **8 Claims**

1. A method for manufacturing a high molecular weight elastomeric butadiene-propylene random copolymer whose propylene unit content is in the range of 3 to 45 mol% and wherein no propylene unit chain exists in the resulting copolymer chain, which comprises copolymerizing, in an inert solvent, butadiene and propylene in the mol ratio ranging from one to ten at a temperature ranging from 0°C to 80°C, in the presence of a catalyst system consisting of (1) at least one compound selected from the group consisting of titanium tetrachloride, titanium tetrabromide, titanium tetraiodide and vanadyl trichloride, (2) an organoaluminum compound having the formula, $AlR^1R^2R^3$ wherein R^1, R^2 and R^3 represent a hydrocarbon radical having 1 to 18 carbon atoms each of which may be the same or different, and (3) phosgene, in which said components (2) and (3) are mixed at room temperature prior to the addition of other catalysts and of monomers, the mol ratio of said component (1) to said component (2) being one to ten, the mol ratio of said component (2) to said component (3) being ten to one, said component (1) being used in the amount of 0.05 to 15 mmol based on 100 gr of the total amount of the monomers as charged.

3,940,379

PROCESS FOR CONTROLLED DEGRADATION OF PROPYLENE POLYMERS

Eugene G. Castagna, Clark; Albert Schrage, East Orange, and Michael F. Repiscak, West Orange, all of N.J., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed May 21, 1973, Ser. No. 362,134
Int. Cl. C08f *27/22, 27/28*
U.S. Cl. 260—88.2 S 12 Claims

1. A process for the controlled oxidative degradation and minimized thermal degradation of propylene polymers, comprising: contacting a propylene polymer exhibiting a first melt flow rate, with gaseous oxygen and with an organic or inorganic peroxide; melting and working said mixture of polymer, oxygen and peroxide in a high shear zone at a temperature and for a time sufficiently low to minimize thermal degradation while subjecting said propylene polymer to substantial oxidative degradation, said polymer being selected from the group consisting of polypropylene and copolymers of propylene and α-olefins of 2 to 6 carbon atoms; and recovering an essentially odor free propylene polymer exhibiting a second melt flow rate higher than said first melt flow rate.

3,940,380

P-GLU-D-PHE-TRP-SER-TYR-2-ME.ALA-LEU-ARG-PRO-H_2 AND INTERMEDIATES

Victor M. Garsky, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 22, 1974, Ser. No. 526,344
Int. Cl.² C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 LH 8 Claims

1. A compound selected from the group consisting of

L-p-Glu-D-Phe-L-Trp-L-Ser-L-Tyr-2-Me·Ala-L-Leu--Arg-L-Pro-Gly-NH_2

and

R^4-L-p-Glu-D-Phe-L-Trp-L-Ser(R^3)-L-Tyr(R^2)-2-Me·Ala-L-Leu-L-Arg(N^G-R^1)-L-Pro-Gly-R

and its non-toxic salts; wherein

R is selected from the class consisting of NH_2, OH, O-(lower)alkyl and O-benzyl; R^1 is selected from the class consisting of hydrogen and a protecting group for the N^δ, N^ω and $N^{\omega'}$ nitrogen atoms of arginine selected from nitro, tosyl, benzyloxycarbonyl and adamantyloxycarbonyl;

R^2 is selected from the class consisting of hydrogen and a protecting group for the phenolic hydroxyl group of tyrosine selected from tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6-dichlorobenzyl, benzyloxycarbonyl and 4-bromobenzyloxycarbonyl;

R^3 is selected from the class consisting of hydrogen and a protecting group for the alcoholic hydroxyl group of serine and is selected from acetyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6-dichlorobenzyl, benzyl and benzyloxycarbonyl;

R^4 is selected from the class consisting of hydrogen and an α-amino protecting group, with the proviso that at least one of R^1, R^2 and R^3 is a protecting group.

3,940,381

PHARMACEUTICALLY ACTIVE COMPOUNDS AND THEIR PREPARATION AND COMPOSITIONS

Laurens R. Boissevain, 8 rue Bel Respiro, Monte Carlo, Monaco

Filed Aug. 13, 1973, Ser. No. 387,822
Claims priority, application United Kingdom, Aug. 22, 1972, 13455/72
Int. Cl.² C07G *3/00*
U.S. Cl. 260—210 R 6 Claims

1. A sparingly soluble product containing a metal glycyrrhizinate selected from the group consisting of iron glycyrrhizinate and aluminium glycyrrhizinate in which the amount of glycyrrhizinic moieties is at least 5% by weight and at least two thirds of the glycyrrhizinic moieties are insoluble in water, the glycyrrhizinic moiety weight being calculated as acid, said product being obtained by heating an aqueous solution of the corresponding water-soluble metal glycyrrhizinate at a temperature of at least 70°C. for at least 6 hours.

3,940,382

1,2′-DI-N-SUBSTITUTED KANAMYCIN B COMPOUNDS

Hamao Umezawa; Kenji Maeda, both of Tokyo; Shinichi Kondo, Yokohama, and Sumio Umezawa, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Aug. 22, 1974, Ser. No. 499,601
Claims priority, application Japan, Aug. 29, 1973, 48-96177
Int. Cl.² C07H *15/22*
U.S. Cl. 260—210 K 5 Claims

1. A compound selected from the group consisting of 1,2′-di-N-(4-amino-2-hydroxybutyryl)-kanamycin B; 1,2′-di-N-(4-amino-2-hydroxybutyryl)-3′,4′-dideoxykanamycin B; 1,2′-di-N-isoserylkanamycin B; 1,2′-di-N-isoseryl-3′,4′-dideoxykanamycin B; and the pharmaceutically acceptable acid-addition salts thereof.

3,940,383

STREPTOZOTOCIN ANALOGS

Allan N. Fujiwara, Sunnyvale; Edward M. Acton, and David W. Henry, both of Menlo Park, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Dec. 12, 1974, Ser. No. 531,887
Int. Cl.² C07H *5/06, 15/02*
U.S. Cl. 260—210 R 6 Claims

1. The 3-methyl-3-nitrosoureido derivatives of the following amino sugars: methyl 3-amino-3-deoxy-β-D-xylopyranoside; methyl 3-amino-3-deoxy-α-D-altropyranoside; 3-amino-3-deoxy-1,2-O-isopropylidene-α-D-ribofuranose; methyl 3-amino-2,3,6-trideoxy-α-L-lyxohexopyranoside; and methyl 3-amino-3-deoxy-α-D-glucopyranoside.

3,940,384

METHYL HYDROXYPROPYL CELLULOSE ACETATE AND PROCESS

James Teng; Frank Dai, and Marcella C. Stubits, all of St. Louis, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Aug. 13, 1973, Ser. No. 387,894
Int. Cl.² C08B *13/00*
U.S. Cl. 260—226 10 Claims

1. The compound methyl hydroxypropyl cellulose acetate having a degree of molar substitution of hydroxypropyl groups of about 2 to about 8, a degree of substitution of methyl groups of about 0.1 to about 1, and a degree of substitution of acetyl groups of about 0.8 to about 2.5, and further characterized by being soluble in organic solvents and insoluble in water.

3,940,385

GLOSSY EMULSION COATING COMPOSITIONS CONTAINING SURFACE TREATED PIGMENTS OF OILOPHILIC NATURE AND METHOD

Richard Glenn Smith, Chagrin Falls, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation of Ser. No. 574,988, March 30, 1956, Pat. No. 3,775,360, which is a continuation-in-part of Ser. No. 230,841, June 9, 1951, abandoned, which is a continuation-in-part of Ser. No. 774,897, Sept. 18, 1947, abandoned. This application May 22, 1973, Ser. No. 362,746. The portion of the term of this patent subsequent to Nov. 27, 1990, has been disclaimed.

Int. Cl.[2] **C08K** *9/04;* **C09D** *3/06, 3/733, 5/02*

U.S. Cl. 260—23.7 A **9 Claims**

1. An emulsion pigment-containing coating composition comprising a continuous aqueous phase and a discontinuous water insoluble oil phase containing dispersed in said discontinuous phase a titanium dioxide pigment which is surface coated with an organic compound effective to render said pigment oilophilic, said organic compound being characterized by at least one non-polar organic group containing a hydrocarbon structure of at least 8 carbon atoms, which group in the form of its monocarboxylic acid is soluble in oleoresinous varnishes and insoluble in water, and at least one polar group selected from the class consisting of carboxylic acids, salts of said carboxylic acids, esters of said carboxylic acids and cationic ammonium and amine surface active groups containing an ionizable negative radical of a water soluble acid, said organic compound being capable of adhering to said pigment surface when said coated pigment is emulsified and being capable of rendering said pigment surface oilophilic, said coating having been applied to said pigment prior to emulsification thereof and prior to dispersion of said coated pigment in said oil phase, and said discontinuous pigmented phase being capable of forming a continuous solid glossy film when dried.

3,940,386

SUBSTITUTED CINNAMOYL-PIPERAZINE-PYRIDYL COMPOUND

Suzanne Szabo, La Tour de Peilz; Francois Molnar, Bionay, both of Switzerland; Roland-Yves Mauvernay, Riom, France; Chau Levan, Monthey, Switzerland; Peter Radanov Statkov, Geneva, Switzerland; Danielle Straumann, Martigny, Switzerland, and Olga Lerik Milovanovic, Bex, Switzerland, assignors to Cermol S.A.

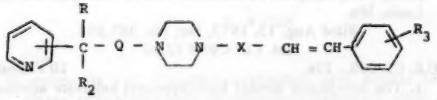
Filed June 21, 1974, Ser. No. 481,794

Claims priority, application Switzerland, June 29, 1973, 9528/73; May 20, 1974, 6899/74

Int. Cl.[2] **C07D** *401/06, 401/12*

U.S. Cl. 260—240 K **2 Claims**

1. A compound of the formula



wherein X represents a carbonyl group >C=O or a methylene group $-CH_2-$,

R represents a phenyl, mono- or di-halophenyl or 2-pyridyl group,

R_2 represents hydrogen, hydroxy or a C_{1-8}-alkyl group,

R_3 represents 1 to 3 groups which can be hydrogen, halogen, C_{1-3}-alkyl, methoxy or dioxymethylene, and

Q represents the $(CH_2)_n$ group, *n* having the value 0, 1, 2, 3, the $-CH=CH-CH_2-$ or $-O-CH_2-CH_2-$ group.

3,940,387

YOHIMBINE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THEIR APPLICATIONS

Germain Saint-Ruf, 83 Rue de l'Egalite, 45 Olivet; Pham Huu Chanh, 84, Rue du Muret, 31 Toulouse, both of France, and Buu Hoi, late of Paris, France

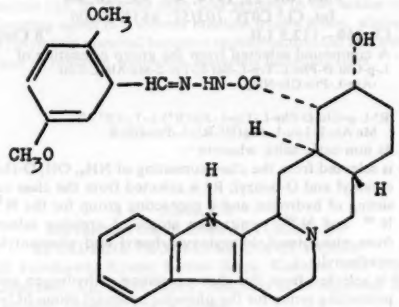
Filed May 5, 1972, Ser. No. 250,807

Claims priority, application France, May 6, 1971, 71.16350

Int. Cl. C07d *33/56*

U.S. Cl. 260—240 AL **3 Claims**

1. The compound of formula



and its pharmaceutically acceptable acid addition salts.

3,940,388

TRIAZOLYLSTYRYL TRIAZOLES

Horst Aebli, Basel; Fritz Fleck, Botimingen, and Horst Schmid, Munchenstein, all of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

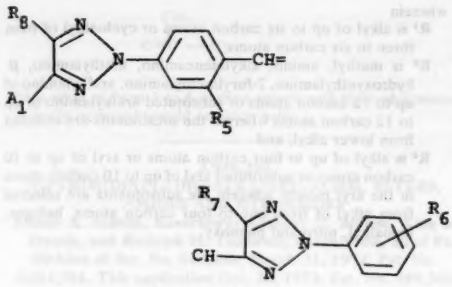
Continuation-in-part of Ser. No. 255,256, May 22, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,002

Claims priority, application Switzerland, May 26, 1971, 7685/71

Int. Cl.[2] **C07D** *249/06*

U.S. Cl. 260—240.9 **8 Claims**

1. A compound of formula



in which

R_8 signifies a sulphonic acid, sulphonic amide, carboxylic amide or nitrile group,

R_6 signifies a hydrogen or chlorine atom, an alkyl radical of 1 to 4 carbon atoms or a carboxylic amide or nitrile group,

R_7 signifies a hydrogen or chlorine atom, or a methyl, hydroxymethyl or acetoxymethyl group,

R_8 signifies a hydrogen or chlorine atom or a methyl group, and

A_1 signifies a styryl, methylstyryl or nitrilostyryl radical, and water soluble sulphonates thereof.

3,940,389

4 (3H)-OXOBENZO-2,1,3-THIADIAZINE-2,2-DIOXIDES

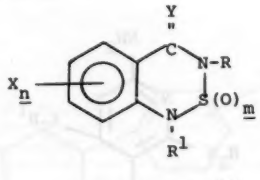
Lennon H. McKendry, and Walter P. Bland, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 398,139, Sept. 17, 1973, abandoned. This application Aug. 15, 1974, Ser. No. 497,582

Int. Cl.² C07D *285/16*

U.S. Cl. 260—243 R **12 Claims**

1. A compound corresponding to the formula:



(I)

wherein:

each X independently represents halo, $Y'R^2$, $Y''CF_2C(Z)_2$, CF_3, nitro, or loweralkyl, with the proviso that at least one X is always halo or nitro;

n represents an integer of from 2 to 4, inclusive;

m represents an integer of 1 or 2;

R and R^1 each independently represent hydrogen, loweralkyl, halololoweralkyl, cycloalkyl, aryl, benzyl, alkenyl, haloalkenyl, alkynyl, haloalkynyl, $-Y'R^2$, $-SCCl_3$,

$-NH_2$, $-SO_2$aryl, $-SO_2$alkyl, $-COOR^3$, $-C(CH_3)_2C \equiv CH$ or $-C(CH_3)_2C \equiv N$;

R^2 is hydrogen or loweralkyl of from one to about four carbon atoms;

R^3 is loweralkyl;

each loweralkyl, halololoweralkyl or $-SO_2$alkyl group has from one to about six carbon atoms; halo represents any one or more of fluoro, chloro, bromo or iodo; cycloalkyl has from about three to about eight carbon atmos; aryl represents phenyl, methylphenyl or halophenyl; and alkenyl, haloalkenyl, alkynyl and haloalkynyl are each radicals having from about three to about six carbon atoms;

each Y, Y' and Y'' independently represents a chalcogen group having an atomic number of from 8 to 16, inclusive;

each Z independently represents bromo, chloro, fluoro, or hydrogen;

and, where at least one of R or R^1 is hydrogen, the salts thereof, with organic or inorganic bases.

3,940,390

PROCESS FOR THE PRODUCTION OF 2,3,4,5,6,7-HEXAHYDROCYCLOPENTA-(3)-1,3-OXAZINE-2,4-DIONE COMPOUNDS

Rolf Jurgen Singer, and Gerhard Jager, both of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

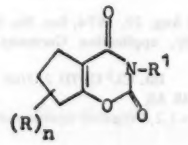
Filed Nov. 28, 1973, Ser. No. 419,841

Claims priority, application Germany, Dec. 13, 1972, 2260859

Int. Cl.² C07D *265/00, 273/00, 295/00*

U.S. Cl. 260—244 R **21 Claims**

1. Process for the production of a 2,3,4,5,6,7-hexahydrocyclopenta-[e]-1,3-oxazine-2,4-dione compound of the formula



wherein

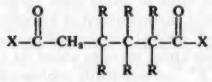
R is alkyl of up to 3 carbon atoms,

R^1 is alkyl of 1 to 12 carbon atoms, optionally substituted cycloalkyl of 5 to 8 carbon atoms, alkenyl of 2 to 6 car-

bon atoms, alkynyl with 1 to 6 carbon atoms and 1 or 2 halogen atoms, haloalkyl with 1 to 6 carbon atoms and 1 or 2 halogen atoms, alkoxyalkyl with 1 to 6 carbon atoms in the alkyl moiety and 1 to 4 carbon atoms in the alkoxy moiety, alkylthioalkyl with 1 to 6 carbon atoms in the alkyl moiety and 1 to 4 carbon atoms in the alkylthio moiety, alkoxycarbonylalkyl with 1 to 6 carbon atoms in the alkyl moiety and 1 to 4 carbon atoms in the alkoxy moiety, aralkyl with 6 to 10 carbon atoms in the aryl moiety and 1 to 3 carbon atoms in the alkyl moiety, cycloalkyl-alkyl with 5 to 8 carbon atoms in the cycloalkyl moiety and 1 to 4 carbon atoms in the alkyl moiety, and optionally substituted aryl of 6 to 10 carbon atoms, the optional substituents on the cycloalkyl or aryl radicals being halogen or alkyl with up to 3 carbon atoms; and

n is an integer of from 0 to 6 inclusive,

which process essentially comprises contacting an adipic acid halide of the formula



wherein

R is hydrogen or alkyl of up to 3 carbon atoms; and

X is halogen,

with about 1 to 1.4 times the molar amount of an isocyanate of the formula

$$O{=}C{=}N{-}R^1$$

wherein

R^1 is defined as above,

in the presence of a tertiary amine, at a temperature from 80° to 180°C.

3,940,391

3,4-DIHYDRO-1,2,4-TRIAZINE COMPOUNDS

Wilfried Draber; Helmut Timmler, both of Wuppertal; Ludwig Eue, and Robert R. Schmidt, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

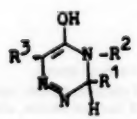
Filed Aug. 29, 1974, Ser. No. 502,249

Claims priority, application Germany, Sept. 18, 1973, 2346936

Int. Cl.² C07D *253/06*

U.S. Cl. 260—248 AS **20 Claims**

1. 3,4-Dihydro-1,2,4-triazine compound of the formula



(I)

wherein

R^1 is alkyl of up to six carbon atoms or cycloalkyl of from three to six carbon atoms;

R^2 is methyl, amino, alkylideneamino, methylamino, β-hydroxyethylamino, 2-furylmethylamino, aralkylamino of up to 12 carbon atoms or substituted aralkylamino of up to 12 carbon atoms wherein the substituents are selected from lower alkyl; and

R^3 is alkyl of up to four carbon atoms or aryl of up to 10 carbon atoms or substituted aryl of up to 10 carbon atoms in the aryl moiety wherein the substituents are selected from alkyl of from one to four carbon atoms, halogen, haloalkyl, nitro and phenoxy.

3,940,392

CERTAIN PYRAZINYLOXYPHENYL UREA COMPOUND

Howard Johnston, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 22, 1974, Ser. No. 435,616

Int. Cl.² C07D *241/18*

U.S. Cl. 260—250 BN **1 Claim**

1. N′-(4-((6-chloro-2-pyrazinyl)oxy)phenyl)-N,N-dimethylurea.

3,940,393

SYNTHESIS OF 2,6-DIAMINOPYRIMIDINES

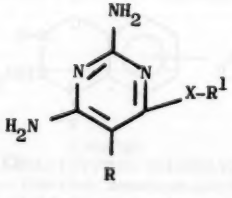
George Greenspan, Narberth; Richard W. Rees, Bryn Mawr, and Peter B. Russell, Villanova, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed June 21, 1974, Ser. No. 481,612

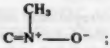
Int. Cl.² C07D *239/34*, *239/42*

U.S. Cl. 260—256.4 N **10 Claims**

1. A compound of the formula:



wherein R is phenyl, 3-chlorophenyl, 4-chlorophenyl, or 3,4-dichlorophenyl, X is $C(OCH_3)_2$, $C(OC_2H_5)_2$, C=O, C=N—OH, C=N—NH_2, C=N—$N(CH_3)_2$, CHOH, or



R^1 is alkyl of from 1 to 6 carbon atoms; and their pharmacologically acceptable acid addition salts.

3,940,394

(2-PYRIMIDINYLTHIO)ALKANOIC ACIDS, ESTERS, AMIDES AND HYDRAZIDES

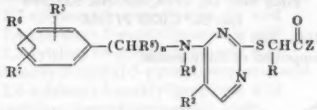
Arthur A. Santilli, Havertown; Anthony C. Scotese, King of Prussia, and Rudolph M. Tomarelli, Phoenixville, all of Pa.

Division of Ser. No. 240,266, March 31, 1972, Pat. No. 3,814,761. This application Oct. 24, 1973, Ser. No. 409,346

Int. Cl. C07d *51/40*

U.S. Cl. 260—256.5 R **3 Claims**

1. A compound of the formula:



in which

R, R^2, R^7, R^8 and R^9 are independently hydrogen or lower alkyl;

R^5 is lower alkyl, lower alkoxy, aryl of 6 to 10 carbon atoms, haloaryl of 6 to 10 carbon atoms or halo;

R^6 is hydrogen, lower alkyl, halo or lower alkoxy;

n is one of the integers 0, 1, 2 or 3; provided that when *n* is 0 and R^5 is lower alkoxy, R^6 is lower alkyl, halo or lower alkoxy; and

Z is —OH, —OM, lower alkoxy or $-(NH)_p-NH_2$, in which *p* is one of the integers 0 or 1 and M is an alkali metal, alkaline earth metal or ammonium cation.

3,940,395

4-AMINO-2-PHENYL-6-THIOPRYIMIDINES

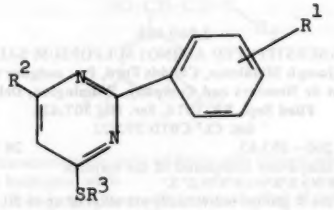
Arthur A. Santilli, Havertown, and Dong H. Kim, Wayne, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 854,300, Aug. 29, 1969, abandoned, Division of Ser. No. 590,198, Oct. 28, 1966, Pat. No. 3,498,984. This application Apr. 23, 1971, Ser. No. 137,060

Int. Cl.² C07D *239/40*

U.S. Cl. 260—256.5 R **20 Claims**

1. A compound selected from the group consisting of those having the formula:



wherein R^1 is selected from the group consisting of hydrogen, dichloro, halogen, methyl, ethyl, propyl and methoxy; R^2 is selected from the group consisting of amino, 4-methylpiperazino, 4-ethylpiperazino, methoxyethylamino, methoxypropylamino, 4-hydroxyethylpiperazino, hydroxyethylamino, hydroxypropylamino, hexahydroazepinyl, dimethoxyethylamino; diethyoxyethylamino, methylamino, ethylamino, propylamino and butylamino; and R^3 is selected from the group consisting of phenyl, halophenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, propoxyphenyl, benzyl, halobenzyl, methylbenzyl, methoxybenzyl, ethoxybenzyl and propoxybenzyl.

3,940,396

1,2,3,4,4A,5,7,7A-OCTAHYDROTHIENO[3,4-B]PYRAZINES 6,6-DIOXIDES

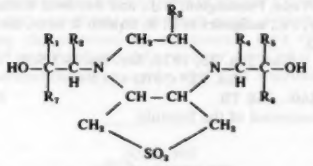
Walter Nudenberg, West Caldwell, N.J.; Edward L. Hagen, Woodbury, Conn.; Julian R. Little, Hendersonville, N.C., and Chung-Ling Mao, Sandy Hook, Conn., assignors to Uniroyal Inc., New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,590

Int. Cl.² C07D *295/10*

U.S. Cl. 260—268 BC **24 Claims**

1. A compound having the formula:



wherein R_1 and R_5 are the same or different and each represents a hydrogen atom, alkyl group having 1 to 10 carbon atoms, phenyl, hydroxymethyl, alkoxymethyl group having 2 to 7 carbon atoms, dimethoxymethyl, diethoxyethyl, tetrahydropyranoxymethyl, phenoxymethyl, o-, m-, p-toloxymethyl, o, m-, p-allylphenoxymethyl, o-, m-, p-chlorophenoxymethyl, β-cyanoethoxymethyl or sulfolanylmethyl group, R_2 and R_4 are the same or different and each represents a hydrogen atom, or lower alkyl group having 1 to 5 carbon atoms, R_1 together with R_2 or R_4 together with R_5 constitute a cyclohexylene group, R_3 is a hydrogen atom or methyl group, and R_6 and R_7 represent a hydrogen atom or methyl group.

3,940,397

2-[(SUBSTITUTED-PIPERAZINYL)ALKYL]-1H-BENZ-[DE]ISOQUINOLINE-1,3(2H)-DIONES

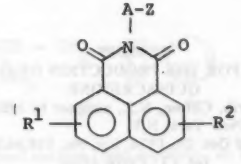
Peter C. Wade, Pennington, N.J., and Berthold Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 13, 1974, Ser. No. 523,293

Int. Cl.² C07D *401/06*

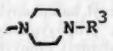
U.S. Cl. 260—268 TR **22 Claims**

1. A compound of the formula



wherein R^1 and R^2 are each independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower

alkoxy, lower alkylthio, nitro, cyano, amino, and trifluoromethyl; A is a straight or branched chain alkylene of 1 to 8 carbons; and Z is



wherein R^3 is selected from the group consisting of phenyl, phenyl-lower alkyl and substituted phenyl and phenyl-lower alkyl and said phenyl substituents are one or more selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower alkylthio, nitro, amino, and trifluoromethyl; or the pharmaceutically acceptable acid addition salts thereof.

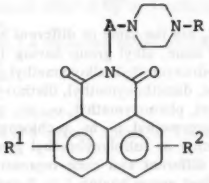
3,940,398

2-[[4-(AZINE OR DIAZINE OR TRIAZINE)-1-PIPERAZINYL]ALKYL]-1H-BENZ-[DE]ISOQUINOLINE-1,3(2H)-DIONES

Peter C. Wade, Pennington, N.J., and Berthold Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 23, 1975, Ser. No. 543,558
Int. Cl.² C07D 401/14
U.S. Cl. 260—268 TR **12 Claims**

1. A compound of the formula:



wherein R^1 and R^2 are each independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, nitro, cyano, amino, and trifluoromethyl; A is a straight or branched chain alkylene of 1 to 8 carbons; and R is a heterocyclic ring selected from the group consisting of pyridinyl, diazine, triazine, and substituted pyridinyl, diazine, or triazine, wherein said heterocyclic ring is attached to the piperazine by way of an available carbon atom and said substituent is a lower alkyl, lower alkoxy, or halogen group attached to one or two available carbon atoms of said heterocyclic ring; or the pharmaceutically acceptable acid addition salts thereof.

3,940,399

PROCESS FOR THE PRODUCTION OF GAMMA QUINACRIDONE

Robert Jarl North, Clifton, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 29, 1974, Ser. No. 518,662
Int. Cl.² C09B 48/00
U.S. Cl. 260—279 QA **3 Claims**

1. A process for producing gamma quinacridone which comprises heating, between 80° and 120°C, a mixture of dianilinoterephthalic acid containing 10–20 weight percent of di-(ortho substituted) anilinoterephthalic acid in the presence of polyphosphoric acid and thereafter diluting the reaction mixture with water and recovering the precipitated gamma quinacridone, wherein the substituents on the di-(ortho substituted) anilinoterephthalic acid are halogens, alkyl containing 1 – 4 carbon atoms, alkoxy containing 1 – 4 carbon atoms, halogenated alkyl containing 1 – 4 carbon atoms or carboalkoxy containing 1 – 4 carbon atoms.

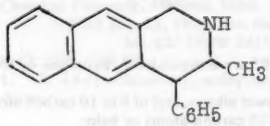
3,940,400

3-METHYL-4-PHENYL-1,2,3,4-TETRAHYDROBENZ[-G]ISOQUINOLINE HYDROBROMIDE

Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Nov. 14, 1974, Ser. No. 523,590
Int. Cl.² C07D 217/08
U.S. Cl. 260—286 R **1 Claim**

1. A compound of the formula:



.HBr

3,940,401

4,4-(O-PHENYLENEDIOXY)-2,2,6,6-TETRAMETHYL PIPERIDINE

Keisuke Murayama; Toshimasa Toda; Eiko Mori; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Onta, and Ichiro Watanabe, all of Tokyo, Japan, assignors to Sankyo Company Limited, Japan

Continuation of Ser. No. 336,981, March 1, 1973, abandoned, which is a division of Ser. No. 219,133, Jan. 19, 1972, Pat. No. 3,790,525. This application July 24, 1974, Ser. No. 491,489
Int. Cl.² C07D 211/44
U.S. Cl. 260—293.58 **1 Claim**

1. 4,4-(o-Phenylenedioxy)-2,2,6,6-tetramethylpiperidine.

3,940,402

TRIS(SUBSTITUTED AMINO) SULFONIUM SALTS

William Joseph Middleton, Chadds Ford, Pa., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Sept. 19, 1974, Ser. No. 507,426
Int. Cl.² C07D 295/22
U.S. Cl. 260—293.63 **28 Claims**

1. An anhydrous compound of the formula
$(R^1R^2N)(R^3R^4N)(R^5R^6N)S^+X^-$
wherein the R groups individually are alkyl of up to 20 carbon atoms each alkyl having at least 2 alpha-hydrogen atoms, with the proviso that any or all of the pairs R^1 and R^2, R^3 and R^4 and R^5 and R^6 taken together with the nitrogen atom to which they are attached from a pyrrolidino or piperidino ring, any substituents being alkyl of up to 8 carbon atoms, and X is selected from the group consisting of $(CH_3)_3SiF_2$, Cl, Br, I, CN, NCO, NCS, NO_3 and N_3.

3,940,403

SUBSTITUTED ACETIC ACID DERIVATIVES AND PRODUCTION THEREOF

Ryozo Maeda, Osaka, and Katsumi Hirose, Nishinomiya, both of Japan, assignors to Shionogi & Co., Ltd., Japan

Filed May 14, 1973, Ser. No. 360,065
Claims priority, application Japan, May 15, 1972, 47-48371
Int. Cl.[2] C07D *213/55*
U.S. Cl. 260—294.8 G 24 Claims

1. A compound selected from the group consisting of:
2-(2-chlorophenoxy-4-pyridyl)propionic acid
2-(2-phenoxy-4-pyridyl)propionic acid
2-(2-m-chlorophenoxy-4-pyridyl)propionic acid
2-(2-phenoxy-5-pyridyl)propionic acid
2-(2-p-chlorophenoxy-5-pyridyl)propionic acid
2-(2-phenylthio-5-pyridyl)propionic acid
2-(2-p-tolyloxy-5-pyridyl)propionic acid
2-(2-p-chlorophenylthio-4-pyridyl)propionic acid
2-(3-phenoxy-5-pyridyl)propionic acid
2-(2-phenoxy-4-methyl-5-pyridyl)propionic acid
2-(2-phenoxy-6-methyl-5-pyridyl)propionic acid
2-[2-(2,3-xylyloxy)-5-pyridyl]propionic acid
2-[2-(3,4-xylyloxy)-5-pyridyl]propionic acid
2-[2-(2,3-xylyloxy)-4-pyridyl]propionic acid
2-(2-phenoxy-3-methyl-5-pyridyl)propionic acid
2-[2-(2,4-xylyloxy)-5-pyridyl]propionic acid
2-(2-o-tolyloxy-5-pyridyl)propionic acid
2-(2-p-isobutylphenoxy-5-pyridyl)propionic acid
2-(2-o-chlorophenoxy-4-pyridyl)propionic acid
2-(2-m-chlorophenoxy-5-pyridyl)propionic acid
2-(2-o-chlorophenoxy-5-pyridyl)propionic acid
2-(2-phenoxy-5-pyridyl)propionic acid-N-oxide
2-(2-p-tolyloxy-4-pyridyl)propionic acid
or alkali metal or alkaline earth metal salts thereof.

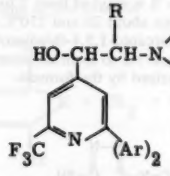
3,940,404

2-SUBSTITUTED PHENYL-6-TRIFLUOROMETHYL-4-PYRIDYL-CARBINOLAMINES

Arthur B. Ash, Detroit; Maurice P. La Montagne, Sterling Heights, and Anica Markovac, Lathrup Village, all of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 448,468, March 6, 1974, Pat. No. 3,886,167. This application Sept. 17, 1974, Ser. No. 506,684
Int. Cl.[3] C07D *213/36*
U.S. Cl. 260—296 R 5 Claims

1. Compound of the formula



and pharmaceutically acid addition salts thereof wherein
R is hydrogen, while
R_1 is hydrogen, lower-alkyl, or cycloalkyl of 3 to 10 carbon atoms
R_2 is lower-alkyl or cycloalkyl of 3 to 10 carbon atoms, R_2 being the same or different as R_1; and
$(Ar)_2$ is phenyl substituted by one trifluoromethyl, chloro, bromo, fluoro or methoxy substituent in the phenyl ring.

3,940,405

POLYACRYLONITRILE COMPOSITION ADMIXED WITH LOW BOILING ACETONITRILE FRACTION AND HIGH BOILING COMPATIBLE PLASTICIZER

George A. Serad, Edison, N.J., assignor to Celanese Corporation, Charlotte, N.C.

Continuation of Ser. No. 122,249, March 8, 1971, abandoned. This application June 13, 1973, Ser. No. 369,636
Int. Cl.[2] C08L *33/20*
U.S. Cl. 260—29.6 AN 5 Claims

1. A polyacrylonitrile composition for melt extrusion consisting essentially of at least 50 weight percent of a high acrylonitrile polymer containing at least 85 percent polymerized units from acrylonitrile admixed with a plasticizing amount of a plasticizing system of about 40 to 70 weight percent low boiling acetonitrile fraction, said acetonitrile fraction consisting essentially of acetonitrile-water mixtures containing up to about 35 percent water and about 60 to 30 percent high boiling compatible plasticizer, said compatible plasticizer consisting essentially of a cyclic-organic ester containing from 3 to 5 carbon atoms and enabling continuous melt extrusion of coherent, undegraded shaped articles at a feed rate of at least 0.05 grams per minute per die orifice, said orifice having a transverse cross-sectional area of to about 0.005 square inch, at temperatures and pressures of about 75° to 200°C and 50 to 15,000 pounds per square inch guage, said shaped articles being characterized by an apparent melt viscosity of about 10^4 to 10^6 poise enabling a draw down of at least 105 to 500 percent during an uptake of at least 3 meters per minute.

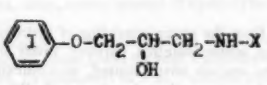
3,940,406

DERIVATIVES OF 1-PHENOXY-3-AMINO-PROPANE-2-OL AND PROCESS FOR THEIR PRODUCTION

Thomas Raabe, Heusenstamm; Josef Scholtholt, Frankfurt am Main, and Rolf-Eberhard Nitz, Bergen-Enkheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

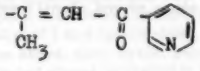
Filed May 21, 1973, Ser. No. 362,567
Claims priority, application Luxemburg, May 24, 1972, 65414
Int. Cl.[2] C07D *213/36*, *213/40*
U.S. Cl. 260—296 AE 12 Claims

1. Derivative of 1-phenoxy-3-amino-propane-2-ol of the formula

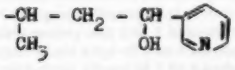


I

in which X denotes



(a) or



(b)

and the phenol nucleus I may be mono-, di- or tri-substituted by alkyl, alkenyl, alkinyl, cycloalkyl, cyclo-alkenyl, alkoxy, alkenyloxy, alkinyloxy, phenyl, halogen or the radical —NR_1R_2, in which R_1 stands for alkyl or an acyl radical derived

from an aromatic or aliphatic carboxylic acid and R_2 stands for hydrogen or alkyl and their acid addition salts.

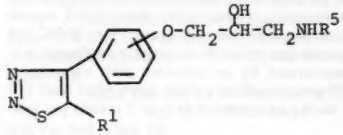
3,940,407

β-ADRENERGIC BLOCKING AGENTS IN THE 1,2,3-THIADIAZOLE SERIES

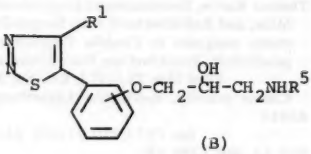
Joseph M. Muchowski, Mexico City, Mexico, and John H. Fried, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Sept. 16, 1974, Ser. No. 506,659
Int. Cl.² C07D 285/06
U.S. Cl. 260—302 D **41 Claims**

1. A compound selected from the group of those represented by the following formulas:



(A)

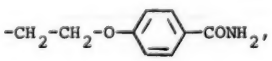


(B)

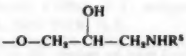
wherein

R^1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, trifluoromethyl, carboxy, lower alkoxycarbonyl, cyano and an unsubstituted, monosubstituted or disubstituted aminocarbonyl group of the formula $CONR^3R^4$, wherein each of R^3 and R^4 is independently hydrogen, alkyl having 1 through 8 carbon atoms, phenyl or phenyl lower alkyl;

R^5 is hydrogen, lower alkyl, cyclomethylene containing from 3 to 7 carbon atoms, phenyl, phenyl lower alkyl, or the group



and the group



can be situated at the ortho-, meta- or para- positions with respect to the thiadiazole ring, and pharmaceutically acceptable acid addition salts thereof.

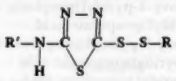
3,940,408

2-AMINO-5-HYDROCARBYLDITHIO-1,3,4-THIADIAZOLE COMPOUNDS

James O. Waldbillig, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 445,384, Feb. 25, 1974, Pat. No. 3,869,395. This application Sept. 9, 1974, Ser. No. 504,640
Int. Cl.² C07D 285/12
U.S. Cl. 260—306.8 D **4 Claims**

1. As a new compound



where R is alkyl, aryl, alkaryl or aralkyl of from 1 to 30 carbons and R′ is hydrogen, alkyl, aryl, alkaryl or aralkyl of from 1 to 30 carbons and wherein said alkyl, aryl, alkaryl, and aralkyl are hydrocarbyl.

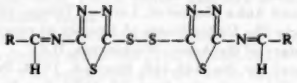
3,940,409

ALKYLIDENIMINO THIADIAZOLE CONTAINING MIXTURE

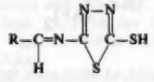
James O. Waldbillig, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 445,385, Feb. 25, 1974, Pat. No. 3,865,739. This application Sept. 9, 1974, Ser. No. 504,637
Int. Cl.² C07D 285/12
U.S. Cl. 260—306.8 D **2 Claims**

1. A thiadiazole derivative mixture containing as a principal product an alkylidenimino thiadiazole characterized by the formula:



where R is alkyl of from 2 to 30 carbons, said mixture prepared by the process consisting essentially of first contacting 2-amino-5-mercapto-1,3,4-thiadiazole with an alkanal of the formula RCHO where R is alkyl of from 2 to 30 carbons at a temperature of between about 20 and 250°C. tuilizing a mole ratio of 2-amino-5-mercapto-1,3,4-thiadiazole to alkanal of between about 10:1 and 1:2 to form an intermediate thiadiazole product characterized by the formula:



and second contacting said thiadiazole intermediate with dimethyl sulfoxide at a temperatue of between about 20 and 150°C. utilizing a mole ratio of said intermediate to said dimethyl sulfoxide of between about 3:1 and 1:50 to form said thiadiazole derivative mixture, said first and second contacting conducted in the presence of a liquid solvent.

3,940,410

BIS-BENZONAZOLEDICARBONITRILES

Hans Kittl, Riehen, Switzerland, assignor to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

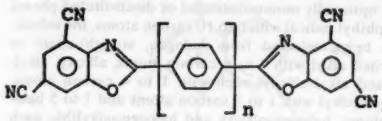
Filed Sept. 5, 1974, Ser. No. 503,277

Claims priority, application Switzerland, Sept. 11, 1973, 13022/73

Int. Cl.² C07D *263/62*

U.S. Cl. 260—307 D 3 Claims

1. A compound of formula I,



I

in which *n* signifies 2 or 3.

3,940,411

5-AMINO-1-METHYL-3-(1-METHYL-5-NITRO-2-IMIDAZOLYL)-1H-1,2,4-TRIAZOLE

Goro Asato, Titusville; Gerald Berkelhammer, Princeton, and William Henry Gastrock, Hightstown, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 202,568, Nov. 26, 1971, Pat. No. 3,790,589, which is a division of Ser. No. 863,378, Oct. 2, 1969, Pat. No. 3,649,638, which is a continuation-in-part of Ser. No. 766,984, Oct. 11, 1968, abandoned. This application Oct. 25, 1973, Ser. No. 409,505

Int. Cl.² C07D *403/04*

U.S. Cl. 260—308 R 1 Claim

1. 5-Amino-1-methyl-3-(1-methyl-5-nitro-2-imidazolyl)-1H-1,2,4-triazole.

3,940,412

2,4,5-TRICHLORO- AND 2,4,5-TRIBROMOIMIDAZOLE DERIVATIVES AND PESTICIDAL COMPOSITIONS CONTAINING THEM

Georg Pissiotas, Loerrach, Germany, assignor to Ciba-Geigy AG, Switzerland

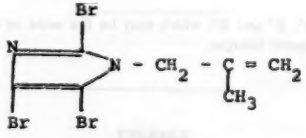
Filed June 23, 1970, Ser. No. 49,183

Claims priority, application Switzerland, July 4, 1969, 10262/69

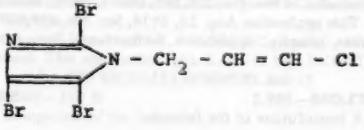
Int. Cl.² C07D *233/68*

U.S. Cl. 260—309 3 Claims

1. The compound of the formula



2. The compound of the formula



3,940,413

1-ETHYL-IMIDAZOLES

Wolfgang Kramer; Karl Heinz Buchel; Werner Meiser, and Manfred Piempel, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

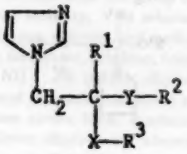
Filed Aug. 20, 1973, Ser. No. 390,042

Claims priority, application Germany, Aug. 29, 1972, 2242454

Int. Cl.² C07D *233/60*

U.S. Cl. 260—309 29 Claims

1. A compound of the formula



wherein

R^1 and R^3 are the same or different and are hydrogen, straight or branched-chain lower alkyl, straight or branched-chain lower alkenyl, cycloalkyl of 3 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms, aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of halogen, halogenoalkyl of 1 or 2 carbon atoms in the alkyl moiety and 2 to 5 halogen atoms, straight or branched-chain alkyl of 1 to 4 carbon atoms, straight or branched-chain alkoxy of 1 to 4 carbon atoms, thioalkyl of 1 to 4 carbon atoms, alkylsulphonyl of 1 to 4 carbon atoms, nitro, cyano, phenyl and hydroxymethyl-substituted phenyl, or aralkyl of 6 to 10 carbon atoms in the aryl moiety and 1 to 4 carbon atoms in the alkyl moiety unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of halogen, halogenoalkyl of 1 or 2 carbon atoms in the alkyl moiety and 2 to 5 halogeno moieties, straight or branched-chain alkyl of 1 to 4 carbon atoms, straight or branched-chain alkoxy of 1 to 4 carbon atoms, thioalkyl of 1 to 4 carbon atoms, alkylsulphonyl of 1 to 4 carbon atoms, nitro, cyano, phenyl or hydroxymethyl-substituted phenyl;

R^2 is straight or branched-chain lower alkyl, straight or branched-chain lower alkynyl, cycloalkyl of 3to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms, aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of halogen, halogenoalkyl of 1 or 2 carbon atoms in the alkyl moiety and 2 to 5 halogeno moieties, straight or branched-chain alkyl of 1 to 4 carbon atoms, straight or branched-chain alkoxy of 1 to 4 carbon atoms, thioalkyl of 1 to 4 carbon atoms, alkylsulphonyl of 1 to 4 carbon atoms, nitro, cyano, phenyl and hydroxymethyl-substituted phenyl, or aralkyl of 6 to 10 carbon atoms in the aryl moiety and 1 to 4 carbon atoms in the alkyl moiety unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of halogen, halogenoalkyl of 1 or 2 carbon atoms in the alkyl moiety and 2 or 5 halogen moieties, straight or branched-chain alkyl of 1 to 4 carbon atoms, straight or branched-chain alkoxy of 1 to 4 carbon atoms, thioalkyl of 1 to 4 carbon atoms, alkylsulphonyl of 1 to 4 carbon atoms, nitro, cyano, phenyl and hydroxymethyl-substituted phenyl;

X is C=O; and

Y is oxygen or sulphur;

or a pharmaceutically acceptable nontoxic salt thereof.

3,940,414
1-PHENOXY-[IMIDAZOLYL-(1)]-2-HYDROXY-ALKANES

Wolfgang Krämer; Karl Heinz Büchel, both of Wuppertal; Paul-Ernst Frohberger, and Hans Scheinpflug, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

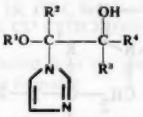
Filed June 17, 1974, Ser. No. 480,433

Claims priority, application Germany, June 30, 1973, 2333354

Int. Cl.² C07D *233/60*

U.S. Cl. 260—309 **6 Claims**

1. An imidazole of the formula



in which

R^1 is optionally monosubstituted or disubstituted phenyl the substituents being selected from halogen, straight-chain or branched alkyl with 1 to 6 carbon atoms, alkoxy and alkylthio with, in either case, 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, halogenoalkoxy and halogenoalkylthio with, in either case, 1 or 2 carbon atoms and 3 to 5 halogen atoms, carbalkoxy with 1 to 4 carbon atoms in the alkoxy moiety, o- and p-phenyl, and nitro;

R^2 is hydrogen, straight-chain or branched alkyl with 1 to 6 carbon atoms or optionally monosubstituted phenyl, the substituents being selected from halogen, straight-chain or branched alkyl with 1 to 6 carbon atoms, alkoxy and alkylthio with, in either case, 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, halogenoalkoxy and halogenoalkylthio with, in either case, 1 or 2 carbon atoms and 3 to 5 halogen atoms, carbalkoxy with 1 to 4 carbon atoms in the alkoxy moiety, o- and p-phenyl, and nitro;

R^3 is hydrogen, alkyl or alkenyl with up to 6 carbon atoms, cycloalkyl with 5 to 6 carbon atoms, optionally substituted benzyl, the substituents being selected from fluorine, chlorine and alkyl and alkoxy, each with up to 4 carbon atoms; and

R^4 is straight-chain or branched alkyl with 1 to 6 carbon atoms, straight-chain or branched alkenyl with 2 to 6 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, optionally substituted phenyl, the substituents being selected from fluorine, chlorine and alkyl and alkoxy each with up to 4 carbon atoms,

or a salt thereof with fungicidal or plant growth-regulating activity.

3,940,415
1-(IMIDAZOLYL-1)-2-ARYLOXY-3-HYDROXY-ALKANES

Karl-Heinz Büchel; Wolfgang Krämer, both of Wuppertal; Paul-Ernst Frohberger, and Hans Scheinpflug, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

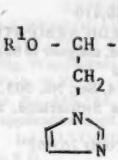
Filed Sept. 30, 1974, Ser. No. 510,833

Claims priority, application Germany, Oct. 5, 1973, 2350123

Int. Cl.² C07D *233/60*

U.S. Cl. 260—309 **5 Claims**

1. A 1-(imidazolyl-1')-2-aryloxy-3-hydroxy alkane of the formula



in which

R^1 is an optionally monosubstituted or disubstituted phenyl or naphthyl radical with 6 to 10 carbon atoms, the substituents being selected from halogen, straight-chain or branched alkyl with 1 to 6 carbon atoms, alkoxy, alkylthio and alkylsulfonyl each with 1 to 4 carbon atoms, halogenoalkyl with 1 to 2 carbon atoms and 1 to 5 halogen atoms, halogenoalkoxy and halogenoalkylthio each with 1 or 2 carbon atoms and 3 to 5 halogen atoms, alkoxycarbonyl with 1 to 4 carbon atoms in the alkoxy moiety, phenyl in the o- and p- position, amino and nitro;

R^2 is alkyl with up to 6 carbon atoms, or phenylalkyl or naphthylalkyl with 1 or 2 carbon atoms in the alkyl moiety and which may be monosubstituted on the phenyl or naphthyl moiety by fluorine, chlorine, alkyl with up to 4 carbon atoms or alkoxy with up to 4 carbon atoms;

R^3 is straight-chain or branched alkyl with 1 to 6 carbon atoms, or hydrogen,

or a salt thereof with fungicidal activity.

3,940,416
BENZIMIDAZOLE SULPHONYL CHLORIDES

John Roger Corbett, Linton, and Albert Percival, Hauxton, both of England, assignors to Fisons Ltd., England

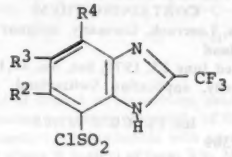
Division of Ser. No. 165,696, July 23, 1971, Pat. No. 3,823,154. This application Apr. 30, 1974, Ser. No. 465,675

Claims priority, application United Kingdom, July 29, 1970, 36673/70; Mar. 16, 1971, 7044/71

Int. Cl.² C07D *235/10*

U.S. Cl. 260—309.2 **6 Claims**

1. A benzimidazole sulphonyl chloride of the formula:



wherein R^2, R^3 and R^4, which may be the same or different, each represent halogen.

3,940,417
QUATERNISED BENZOFURANYL-BENZIMIDAZOLES

Hans Schlaepfer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

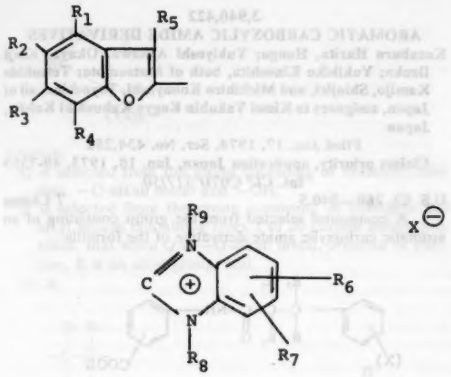
Continuation of Ser. No. 205,303, Dec. 6, 1971, abandoned. This application Aug. 22, 1974, Ser. No. 499,687

Claims priority, application Switzerland, Dec. 9, 1970, 18251/70

Int. Cl.² C07D *235/12, 307/81*

U.S. Cl. 260—309.2 **5 Claims**

1. A benzofurane of the formula



wherein

R_1 denotes hydrogen or a lower alkyl group or together with R_2 denotes a fused benzene radical,

R_2 denotes hydrogen, a lower alkyl or alkoxy group, chlorine, bromine, carboxyl, aminocarbonyl, sulphonic acid, aminosulphonyl, or together with R_3 denotes a fused benzene radical,

R_3 denotes hydrogen, lower alkyl, alkoxy or together with R_4 denotes a fused benzene radical,

R_4 denotes hydrogen, a lower alkyl group, chlorine or bromine,

R_5 denotes hydrogen, a lower alkyl group or phenyl,

R_6 denotes hydrogen, lower alkyl, lower alkoxy, chlorine, bromine, or phenyl,

R_7 is hydrogen,

R_8 denotes a lower alkyl group, a hydroxy-lower-alkyl group, cyanoethyl, phenyl which is unsubstituted or substituted by a chlorine, bromine, a lower alkyl or lower alkoxy group, or phenyl loweralkyl,

R_9 denotes a lower alkyl group, a hydroxy-lower-alkyl group, phenyl lower-alkyl which is unsubstituted or substituted by chlorine or lower alkoxy, or the $-CH_2CN$, $-CH_2CONH_2$ or $-CH_2$-COOR radical, wherein R represents alkyl with one to four carbon atoms, and

X denotes halogen, lower alkylsulphonic acid or phenylsulphonic acid which is unsubstituted or substituted by lower alkyl.

3,940,418

ESTERS AND AMIDES OF 4,5-DIHYDROBENZ[G]INDAZOLE-3-CARBOXYLIC ACIDS AND RELATED COMPOUNDS

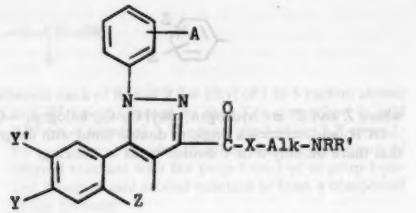
Robert W. Hamilton, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 242,232, April 7, 1972, abandoned. This application Apr. 3, 1974, Ser. No. 457,451

Int. Cl.² C07D *231/54;* **A61K** *31/415*

U.S. Cl. 260—310 R **8 Claims**

1. A compound of the formula



wherein A is selected from the group consisting of hydrogen, halogen, and methoxy; Y is selected from the group consisting of hydrogen, chlorine, and methoxy; Y′ is hydrogen or methoxy; Z is methylene, ethylene, trimethylene, or vinylene; X is O or —NH—; Alk is lower alkylene containing up to 6 carbon atoms and separating the atoms attached thereto by at least two carbon atoms; NRR′ is selected from the group consisting of di(lower alkyl)-amino wherein each lower alkyl group contains up to 6 carbon atoms, 1-pyrrolidinyl, and piperidino.

3,940,419

PHTHALIMIDE DERIVATIVES AND THEIR USE AS PLANT GROWTH REGULANTS

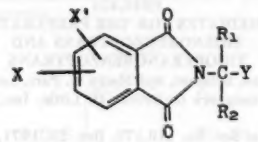
Robert Eugene Diehl, Trenton, and Bryant Leonidas Walworth, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 348,355, April 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 282,537, Aug. 21, 1972, abandoned. This application July 25, 1973, Ser. No. 382,418

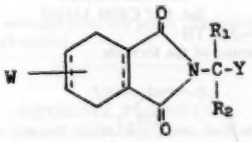
Int. Cl.² C07D *209/34*

U.S. Cl. 260—326 A **16 Claims**

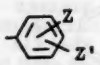
1. A compound having the formula:



or



wherein W is hydrogen or alkyl C_1–C_4; X and X′ each represents hydrogen, halogen, alkyl C_1–C_4, CF_3, alkoxy C_1–C_4, benzyloxy, di(C_1–C_4)alkylamino, C_1–C_4 alkylthio, hydroxy, C_1–C_4 alkylsulfonyl, alkanoylamino C_1–C_4 or nitro; Y is $-CONHR_5$—$CONR_5R_6$, $-CONHN(R_5)_2$, $-CONHN^+(R_6)_3$ .halide$^-$ —CN or $-COR_7$ with the proviso that at least one of X and X′ is a substituent other than hydrogen; R_1 and R_2 each represent alkyl C_1–C_4 or when taken together with the carbon to which they are attached form cycloalkyl C_4–C_{11} optionally substituted with methyl; R_3 and R_4 each represent hydrogen or alkyl C_1–C_4; R_5 and R_6 each represent alkyl C_1–C_3, R_7 is halogen, R_8 is $-CH_3$ or



where Z and Z' are hydrogen, alkyl C_1–C_2, halogen, $-CF_3$ or $-OCH_3$ and ═══ is a single or double bond with the proviso that there be only 0 or 1 double bond in the ring.

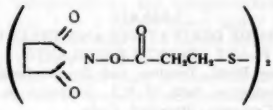
3,940,420

COMPOUND, DITHIOBIS-(SUCCINIMIDYL PROPIONATE)

Paul K. Smith, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Filed July 15, 1974, Ser. No. 488,541
Int. Cl.² C07D 207/12
U.S. Cl. 260—326.26 **1 Claim**

1. The compound dithiobis-(succinimidyl propionate) represented by the formula



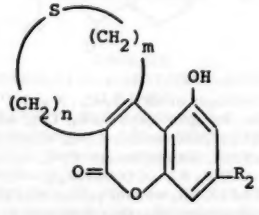
3,940,421

INTERMEDIATES FOR THE PREPARATION OF THIENOBENZOPYRANS AND THIOPYRANOBENZOPYRANS

Raj K. Razdan, Belmont, and Harry G. Pars, Lexington, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 210,170, Dec. 20, 1971, Pat. No. 3,883,551, which is a continuation-in-part of Ser. No. 852,928, Aug. 25, 1969, abandoned. This application Sept. 23, 1974, Ser. No. 508,065
Int. Cl.² C07D 333/00
U.S. Cl. 260—327 TH **12 Claims**

1. A compound of the formula



wherein *m* and *n* are each 0, 1, 2 or 3 and $m + n$ is 2 or 3 and R_2 is alkyl containing from 1 through 20 carbon atoms or cycloalkyllowеralkyl in which the cycloalkyl group contains from 3 through 8 ring carbon atoms and the loweralkyl group contains from 1 through 6 carbon atoms.

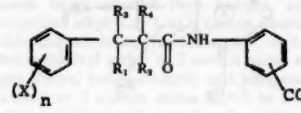
3,940,422

AROMATIC CARBOXYLIC AMIDE DERIVATIVES

Kozaburo Harita, Hongo; Yukiyoshi Ajisawa, Okaya; Kinji Iizuka; Yukihiko Kinoshita, both of Matsumoto; Tetsuhide Kamijo, Shiojiri, and Michihiro Kobayashi, Toyoshina, all of Japan, assignors to Kissei Yakuhin Kogyo Kabushiki Kaisha, Japan

Filed Jan. 17, 1974, Ser. No. 434,252
Claims priority, application Japan, Jan. 18, 1973, 48-7359
Int. Cl.² C07D 317/50
U.S. Cl. 260—340.5 **7 Claims**

1. A compound selected from the group consisting of an aromatic carboxylic amide derivative of the formula:



and therapeutically acceptable salts thereof, in which R_1 and R_2 are each a hydrogennatom or an alkyl group having 1–4 carbon atoms, R_3 and R_4 are each a hydrogen atom or together form another chemical bond, each X is a hydroxyl group, a halogen atom, an alkyl group having 1–4 carbon atoms and an alkoxy group having 1–4 carbon atoms, and *n* is an integer of 1–3, provided that when two X's are said alkyl or alkoxy groups, the alkyl groups thereof may be connected together into an alkylene group.

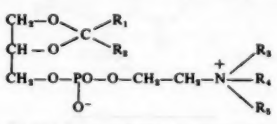
3,940,423

1,2-O-DIALKYLMETHYLIDENE-GLYCERO-3-PHOSPHATIDES

Hansjorg Eibl, Bovenden, and Alfar Nicksch, Goettingen-Nikolausberg, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Goettingen, Germany

Filed Aug. 28, 1974, Ser. No. 501,182
Claims priority, application Germany, Sept. 6, 1973, 2345060
Int. Cl.² C07F 9/10
U.S. Cl. 260—340.9 **4 Claims**

1. A phosphatide which is a compound of the formula



wherein R_1 and R_2 are alkyl having 9 to 17 carbon atoms, and R_3, R_4, and R_5 are hydrogen or methyl, or an acid addition salt of said compound.

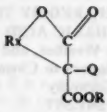
3,940,424

LACTONES

Kent P. Lannert, Freeburg, Ill., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 19, 1973, Ser. No. 426,295
Int. Cl.² C07D 307/32
U.S. Cl. 260—343.6 **4 Claims**

1. A compound represented by the formula



wherein:

Q is selected from the group consisting of bromine, chlorine, —O-alkali metal and —OH;

R is selected from the group consisting of hydrogen and alkyl groups containing from 1 to 20 carbon atoms, provided, that when Q is —O-alkali metal, bromine or chlorine, R is an alkyl group; and,

Rx is

Rz being hydrogen, alkyl, phenyl alkyl, alkoxy alkyl, alkoxy phenyl, alkoxy phenyl alkyl, and COOR; the total number of carbon atoms in Rx being from 2 to 22.

3,940,425
PROCESS FOR THE PRODUCTION OF POLYUNSATURATED COMPOUNDS

Karl Eiter, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Germany

Filed Aug. 28, 1974, Ser. No. 501,227

Claims priority, application Germany, Sept. 6, 1973, 2344985; May 28, 1974, 2425813

Int. Cl.² C07D *309/22*; C07F *7/02*

U.S. Cl. 260—345.9 **20 Claims**

1. A process which comprises

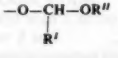
a. forming an intermediate complex by combining, in an organic solvent, at temperature of from −40° to +100°C and in the presence of at least one antioxidant,

i. a molar equivalent amount of a copper(I) halide or copper(I) cyanide,

ii. from 1 to 1.5 molar equivalent amount of an ethynyl reactant of the formula:

$R^1C{\equiv}CH$

in which R^1 is hydrogen, alkyl of 1 to 12 carbon atoms, alkenyl of 2 to 12 carbon atoms, alkynyl of 2 to 12 carbon atoms, polyalkenyl of up to 12 carbon atoms, polyalkynyl of up to 12 carbon atoms, or said alkyl, alkenyl, alkynyl, polyalkenyl or polyalkynyl substituted by tetrahydropyranyloxy, tri(lower alkyl)silyl, hydroxy, carboxy, carbo(lower alkoxy), carboxamide or a group of the formula:



in which each of R^I and R^{II} is alkyl of 1 to 5 carbon atoms; and

iii. from 1 to 1.5 molar equivalent amount of 1,8-diazabicyclo[5.4.0]undecene or 1,5-diazabicyclo[4.3.0]nonene, and

b. combining with said complex at least a molar equivalent amount of a second reactant of the formula:

XR^2

in which X is chloro, bromo or iodo and

R^2 is a mono- or poly-unsaturated aliphatic hydrocarbon of up to 12 carbon atoms, unsubstituted or substituted by tetrahydropyranyloxy, tri(lower alkyl)silyl, hydroxy, carboxy, carbo(lower alkoxy), carboxamide or a group of the formula:

wherein each of R^I and R^{II} is alkyl of 1 to 5 carbon atoms; said R^2 being selected so that X is comprised in said XR^2 on a terminal 3-X-prop-1-en-1-yl or 3-X-prop-1-yn-1-yl group, thereby coupling the ethynyl group of ethynyl reactant with the prop-1-en-1-yl or prop-1-yn-1-yl group of said second reactant to form a compound of the formula:

$R^1C{\equiv}CR^2$

in which R^1 and R^2 are as defined above.

3,940,426
PROCESS FOR PRODUCING BIPHENYLTETRACARBOXYLIC DIANHYDRIDES

Hiroshi Itatani; Mikito Kashima; Masaoki Matsuda; Hataaki Yoshimoto, and Hiroyuki Yamamoto, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Jan. 16, 1973, Ser. No. 324,050

Claims priority, application Japan, Apr. 3, 1972, 47-32554; May 19, 1972, 47-49143

Int. Cl.² C07D *307/89*

U.S. Cl. 260—346.3 **3 Claims**

1. A process for separating biphenyltetracarboxylic dianhydride isomers from a mixture of these isomers, which comprises fractionally crystallizing said mixture in a solvent selected from the group consisting of saturated aliphatic acid anhydrides and ketones while heating to a temperature of from about 50°C to about 250°C to thereby separate the mixture into its constituent isomers.

3,940,427
AZIDOSULFONYL COMPOUNDS

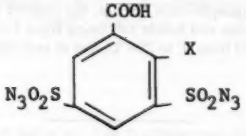
Peter Joseph Orenski, Ossining, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 26, 1974, Ser. No. 483,376

Int. Cl.² C07C *117/00*

U.S. Cl. 260—349 **3 Claims**

1. A diazidosulfonyl-containing aromatic carboxylic acid having the formula:



wherein X is selected from the group consisting of hydrogen and a hydroxyl radical.

3,940,428
METHANOL PRODUCTION

Anthony John Connell, and Alwyn Pinto, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 883,126, Dec. 8, 1969, abandoned. This application Dec. 7, 1972, Ser. No. 313,164

Claims priority, application United Kingdom, Dec. 30, 1968, 61663/68

Int. Cl.² C07C *31/04*

U.S. Cl. 260—449.5 **7 Claims**

1. In a process for producing methanol from a gaseous aliphatic hydrocarbon feedstock of empirical formula CH_x where x is between 2 and 4 which comprises steam reforming the feedstock to give a synthesis gas containing hydrogen and at least one carbon oxide selected from the group consisting of carbon monoxide and carbon dioxide, the amount of hydro-

gen in the resulting synthesis gas being in excess of the stoichiometric amount necessary to form methanol, and reacting the synthesis gas in a catalytic synthesis stage using a copper catalyst to obtain methanol, the improvement which comprises reacting the synthesis gas incompletely in said catalytic synthesis stage to give a reaction product of methanol and unreacted hydrogen and carbon oxide, separating methanol from the remaining gas in said reaction product, recycling the remaining gas comprising unreacted hydrogen and carbon oxide to said synthesis stage for further reaction to form more methanol, and controlling the amount of hydrogen thereby recycled to said synthesis stage to prevent undesired build-up of hydrogen in said synthesis stage by withdrawing a part of said remaining gas before it is recycled to said synthesis stage, separating the carbon oxide from the hydrogen in this withdrawn part and recycling only the separated carbon oxide from said withdrawn part to said synthesis stage for reaction with hydrogen to form further methanol.

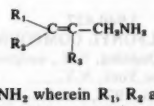
3,940,429

OXIDATION OF UNSATURATED AMINES

John S. McConaghy, Jr., and Dennis C. Owsley, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 9, 1974, Ser. No. 530,930
Int. Cl.² C07C *120/00*
U.S. Cl. 260—465.9 8 Claims

1. A process for the production of an unsaturated nitrile which comprises reacting an unsaturated amine having the formula



or phenyl—CH_2NH_2 wherein R_1, R_2 and R_3 represent hydrogen or a C_1 to C_4 alkyl group with molecular oxygen in the presence of cuprous chloride, a nitrogen base that is not oxidized under the reaction conditions and a halide salt which is soluble in the nitrogen base and is selected from alkali metal halides, alkaline earth metal halides, quaternary ammonium halides, and phosphonium halides, the relative proportions of cuprous chloride and halide salt being from 1:10 to 10:1, at a temperature of from 0° to 200°C. and at atmospheric pressure or above.

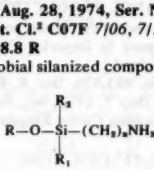
3,940,430

SILANIZED ANTIMICROBIAL COMPOUNDS

Mortimer Wilkes Brenner, Scarsdale, and Louis Laufer, New York, both of N.Y., assignors to Schwarz Services International Ltd., Mount Vernon, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,058
Int. Cl.² C07F *7/06, 7/10, 7/18*
U.S. Cl. 260—448.8 R 26 Claims

1. An antimicrobial silanized compound having the formula



wherein R is a radical taken from the group consisting of a chlorinated phenol, bis-phenol or diphenyl ether, a 6 to 9 carbon atom alkyl or chlorine substituted dihydric phenol, an ortho or para hydroxybenzoic acid or a 1 to 12 carbon atom alkyl ester thereof; R_1 and R_2 are methoxy, ethoxy or propoxy; and *n* is 2 to 4.

3,940,431

DIMETHYL TEREPHTHALATE PREPARED BY THE ESTERIFICATION OF TEREPHTHALIC ACID

Horst-Dieter Wulf; Ferdinand List; Kurt Wember, and Norbert Wilke, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed May 18, 1973, Ser. No. 361,597
Claims priority, application Germany, May 20, 1972, 2224869
Int. Cl.² C07C *69/82*
U.S. Cl. 260—475 R 9 Claims

1. In the continuous method for the preparation of dimethyl terephthalate by the esterification of terephthalic acid with methanol in the gas phase, comprising vaporizing solid terephthalic acid with a hot methanol vapor stream in a pre-reactor and introducing the reaction product of the pre-reactor into a follow-up reactor having a solid bed catalyst to produce a hot gaseous dimethyl terephthalate product stream, part of this stream being the output of the process the improvement comprising recirculating a portion of said dimethyl terephthalate product stream to said pre-reactor.

3,940,432

PROCESS FOR MAKING ETHYLENE GLYCOL

Wellington E. Walker, Charleston, and Jean B. Cropley, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 371,353, June 19, 1973, abandoned. This application May 15, 1974, Ser. No. 470,115
Int. Cl.² C07C *27/06, 29/16*
U.S. Cl. 260—449 R 7 Claims

1. In the continuous process of producing ethylene glycol and methanol which comprises converting a mixture of a continuous feed of carbon monoxide and a continuous feed of hydrogen to produce ethylene glycol and methanol by contacting said mixture with a catalytic amount of rhodium in complex combination with carbon monoxide, at a temperature of between about 100°C. to about 375°C. and a pressure of between about 500 p.s.i.a. and about 50,000 p.s.i.a. sufficient to form said ethylene glycol and methanol, wherein the improvement comprises maintaining the concentration of ethylene glycol in the reaction mixture at less than about 5 gram moles per liter of reaction mixture from said reaction and maintaining the molar formation ratio between ethylene glycol and methanol in the reaction mixture in excess of about 0.3.

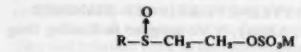
3,940,433

NOVEL 2-(ALKYLSULFINYL)ETHYL SULFATES AND COMPOSITIONS EMPLOYING SAME

Vincent Lamberti, Upper Saddle River, and Wilder F. Pease, Norwood, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed June 6, 1974, Ser. No. 476,809
Int. Cl.² C07C *141/02*
U.S. Cl. 260—458 13 Claims

1. A novel compound having the structure



wherein R is a straight or branched chain alkyl radical having from 10–20 carbon atoms and M is selected from the group consisting of an alkali metal, ammonium, alkyl substituted ammonium and alkylolammonium cations, said alkyl groups having from 1–6 carbon atoms.

3,940,434

DICARBOXYLIC ACIDS AND DERIVATIVES

Georges Haas, Oberwil; Erwin F. Jenny, Basel, and Alberto Rossi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

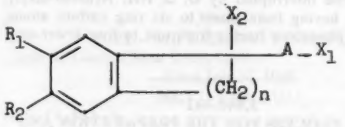
Filed Aug. 16, 1973, Ser. No. 389,105

Claims priority, application Switzerland, Aug. 24, 1972, 12538/72

Int. Cl.² C07C *63/595, 69/76*

U.S. Cl. 260—475 SC 12 Claims

1. A compound of the formula



(I)

wherein A denotes the direct bond or a methylene group, one of the groups R_1 and R_2 denotes hydrogen, halogen, lower alkyl with 1 to 4 carbon atoms, or trifluoromethyl and the other denotes a cycloalkyl group with 4 to 8 carbon atoms, X_1 and X_2 independently of one another denote a carboxyl group or a lower alkoxycarbonyl group with 2 to 5 carbon atoms, and *n* denotes an integer from 1 to 3, and pharmaceutically acceptable salts thereof.

3,940,435

PERFLUOROALKYL COMPOUNDS

Armin Hiestand, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,811

Claims priority, application Switzerland, Sept. 15, 1972, 13548/72; Feb. 2, 1973, 1560/73

Int. Cl.² C07C *147/02, 147/14*

U.S. Cl. 260—481 R 11 Claims

1. A perfluoroalkyl compound of the formula

$$R_f—CH_2CH_2—SO_x—C_mH_{2m}A$$

wherein

R_f is a perfluoroalkyl radical with 5 to 18 carbon atoms,

A is COOH, COOR,

R is alkyl with 1 to 20 carbon atoms,

x is 1 or 2 and

m is a whole number from 1 to 3, with the proviso that when A is carboxyl, then *m* is only 1 if *x* is 1.

3,940,436

SUBSTITUTED ETHANE DIPHOSPHONIC ACIDS AND SALTS AND ESTERS THEREOF

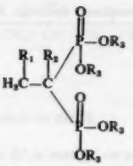
Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 27,988, April 13, 1970, Pat. No. 3,705,191. This application Aug. 23, 1972, Ser. No. 283,251

Int. Cl.² C07F *9/38, 9/28*

U.S. Cl. 260—502.5 7 Claims

1. An ethane diphosphonate of the formula



wherein each R_3 is individually selected from the group consisting of hydrogen, alkali metal ions, alkaline earth metal ions, ammonium ions and lower alkyl amine ions, and R_1 and R_2 are either hydroxy or $-N(R_4)_2$ groups wherein R_4 is either hydrogen or alkyl, provided that R_1 or R_2, but not both, is always hydroxy.

3,940,437

STYRYL-DIPHENYL DERIVATIVES

Hugh Davidson, Castleford; Keith Trevor Johnson, Pontefract; Brian Ernest Leggeter, Wakefield, and Anthony John Moore, Leeds, all of England, assignors to Hickson & Welch Limited, Castleford, England

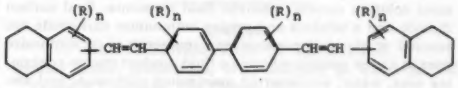
Filed July 24, 1973, Ser. No. 382,168

Claims priority, application United Kingdom, July 26, 1972, 35033/72

Int. Cl.² C07C *143/24*

U.S. Cl. 260—505 C 3 Claims

1. A compound of the formula



wherein R is $-SO_3H$ and n is 0, 1 or 2, at least one $-SO_3H$ group being present; or a salt thereof.

3,940,438

CRYSTALLINE RACEMIC 9α,11α,15(S)-TRIHYDROXY-5-CIS,13-TRANS-PROSTADIENOIC ACID

Ned M. Weinshenker, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 146,491, May 24, 1971, abandoned. This application Sept. 21, 1973, Ser. No. 399,591

Int. Cl.² C07C *61/38*

U.S. Cl. 260—514 D 1 Claim

1. Crystalline, racemate 9α,11α,15(S)-trihydroxy-5-cis,-13-trans-prostadienoic acid wherein the crystals are characterized by the following X-ray diffraction data:

Interplanar Spacings, A°	
27.60	4.65
18.19	4.09
13.00	3.54
10.33	3.30
8.38	2.98
7.31	2.79
6.06	2.63
5.40	2.53
4.92	2.04
4.67	

and wherein the crystals system is monoclinic, the crystal habit is tubular, the optic sign is negative, and the melting point is 63.5°C to 64°C.

3,940,439
ACID CHLORIDE SYNTHESIS

Terence Alfred Harrow, High Wycombe, England, assignor to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 14, 1973, Ser. No. 415,722
Int. Cl.² C07C *51/58, 57/06*
U.S. Cl. 260—544 Y **7 Claims**

1. A process for the manufacture of α-chloroacrylyl chloride which comprises contacting α-chloroacrylic acid with oxalyl chloride and isolating the product.

3,940,440
METHOD OF CONTROLLING UREA SYSTEM

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10021

Continuation of Ser. No. 88,272, Nov. 10, 1970, abandoned. This application May 9, 1974, Ser. No. 468,255
Int. Cl.² C07C *126/00*
U.S. Cl. 260—555 A **5 Claims**

1. In a urea synthesis process system with ammonium carbamate solution recycle, wherein fluid ammonia, fluid carbon dioxide and a solution comprising ammonium carbamate are reacted at elevated pressure and temperature to synthesize urea in a urea reactor, wherein a fluid product stream containing urea, water, unconverted ammonium carbamate and ammonia is subjected to the separation of an aqueous urea solution from unconverted reactants ammonium carbamate and ammonia, said separation being accomplished by heating said product stream in a decomposer system at reduced pressure for the purpose of decomposing said unconverted ammonium carbamate to gaseous NH_3 and CO_2, of vaporizing said ammonia and of expelling the total mixture of gaseous NH_3 and CO_2 from the aqueous urea solution together with some water vapor, and wherein said mixture of gaseous NH_3 and CO_2 containing some water vapor, separated from the residual aqueous urea solution, is partially or totally condensed in a condensing system to a liquid phase containing ammonium carbamate, ammonia and water, and said liquid phase is recycled to said urea reactor;

the improvement which comprises:

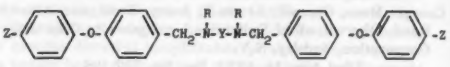
1. sensing a refractive index value of said liquid phase recycled to said reactor, said refractive index value being a function of the weight ratio of CO_2 as carbamate to water in said liquid phase;
2. detecting deviations of said sensed refractive index value from a reference value, which reference value corresponds to a reference weight ratio of CO_2 as carbamate to water in said liquid phase within the range of from about 0.2 to about 4; and
3. regulating the weight ratio of CO_2 to water in said liquid phase as a function of said deviations to substantially reduce said deviations, thereby maintaining said weight ratio substantially at said reference weight ratio.

3,940,441
N,N'-BISPHENOXYBENZYL-BRIDGED-DIAMIDES

Alexander R. Surrey, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 331,325, Feb. 9, 1973, Pat. No. 3,876,701, which is a division of Ser. No. 29,643, April 17, 1970, Pat. No. 3,772,370, which is a continuation-in-part of Ser. No. 652,013, July 10, 1967, abandoned, which is a continuation of Ser. No. 390,451, Aug. 18, 1964, abandoned. This application July 15, 1974, Ser. No. 488,330
Int. Cl.² C07C *103/34*
U.S. Cl. 260—562 B **5 Claims**

1. A compound of the formula

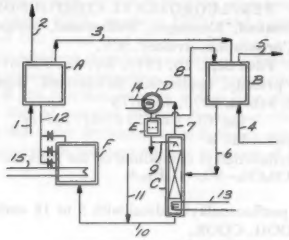


wherein Z is nitro or amino; R is phenylcarbamyl or dihaloacetyl; and Y is alkylene having from two to ten carbon atoms and having its connecting linkages on different carbon atoms or said alkylene interrupted by O, S, NH, N(lower-alkyl), cycloalkylene having from three to six ring carbon atoms, phenylene or phenylene having from one to four lower-alkyl substituents.

3,940,442
RECYCLE PROCESS FOR THE PREPARATION AND PROCESSING OF A HYDROXYLAMMONIUM SALT SOLUTION

Abraham H. de Rooij, Geleen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 95,318, Dec. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 95,389, Dec. 4, 1970, abandoned. This application Jan. 17, 1975, Ser. No. 542,045
Claims priority, application Netherlands, Dec. 6, 1969, 6918366; Dec. 6, 1969, 6918367
Int. Cl.² C07C *131/04*
U.S. Cl. 260—566 A **5 Claims**



1. In a process for producing cyclohexanone oxime in which a buffered, acidic reaction medium comprising an aqueous solution containing phosphoric acid, or ammonium bisulphate is cycled from a hydroxylamine synthesis zone to a cyclohexanone oxime synthesis zone, and back to the hydroxylamine synthesis zone, wherein nitrate ions are obtained in said solution by addition of nitric acid to said solution just prior to introduction into the hydroxylamine synthesis zone and molecular hydrogen is added to the hydroxylamine synthesis zone, said nitrate ions being catalytically reduced to hydroxylamine with said molecular hydrogen in the presence of a supported palladium metal catalyst contained in the hydroxylamine synthesis zone, the solution rich in hydroxylamine from the hydroxylamine synthesis zone is fed with cyclohexanone to said cyclohexanone oxime synthesis zone wherein the hydrox-

ylamine and the cyclohexanone react with each other to form cyclohexanone oxime, separating the cyclohexanone oxime and unreacted cyclohexanone from said solution and recycling said solution back to said hydroxylamine synthesis zone,

the improvement of substantially preventing the poisoning of said palladium catalyst consisting of reducing residual amounts of cyclohexanone and cyclohexanone oxime present in the solution after removal of the cyclohexanone oxime produced in the cyclohexanone oxime synthesis zone by heating said solution being recycled from the cyclohexanone oxime synthesis zone to the hydroxylamine synthesis zone to an elevated temperature in the range of 50° to 106° C. for a time sufficiently long enough so that residual amounts of cyclohexanone and cyclohexanone oxime are substantially reduced to below 0.02% by weight.

3,940,443

FUEL—AIR EXPLOSIVE BOMBLET

Cecil A. Glass, China Lake, Calif.

Filed July 14, 1965
Int. Cl.[2] F24B 25/12
U.S. Cl. 102—6 8 Claims

8. In a device for forming a detonatable fuel-air cloud and effecting a detonation thereof, means including:

a sealed container;

a mass of inflammable fuel substantially filling said container;

a plurality of actuatable detonators fixed to said containers;

a detonatable burster charge mounted within said container and surrounded by said fuel adapted to be selectively detonated for thereby establishing an outwardly directed shock wave of a magnitude sufficient for rupturing said container, dividing said mass into a plurality of smaller masses and rapidly propelling said masses and said detonators outwardly from said containers through ambient atmospheric air, whereby a detonatable cloud of a fuel and air mixture may be thus established with said detonators being caused to pass therethrough; and

means connected with said detonators adapted to actuate said detonators as they pass through the cloud, whereby said cloud may be detonated in response to an actuation of the detonators.

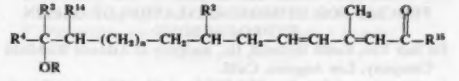
3,940,444

NOVEL KETO-ETHERS

Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 222,800, Feb. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 187,897, Oct. 8, 1971, Pat. No. 3,755,411, which is a continuation-in-part of Ser. Nos. 111,650, Feb. 1, 1971, Pat. No. 3,729,486, and Ser. No. 111,770, Feb. 1, 1971, abandoned. This application May 10, 1974, Ser. No. 468,856
Int. Cl.[2] C07C 49/20, 49/24
U.S. Cl. 260—594 13 Claims

1. A compound selected from those of the following formula:



wherein,

R is hydrogen, methyl or ethyl;

n is zero or one;

each of R^2, R^3 and R^4 is methyl or ethyl;

R^{14} is hydrogen or methyl; and

R^{15} is lower alkyl of one to three carbon atoms.

3,940,445

PRODUCTION OF 2-METHYL-4-HALOBUT-2-EN-1-ALS

Werner Reif, Frankenthal; Roman Fischer, and Horst Pommer, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 15, 1970, Ser. No. 81,143
Claims priority, application Germany, Oct. 18, 1969, 1952649
Int. Cl.[2] C07C 47/14
U.S. Cl. 260—601 H 9 Claims

1. A process for the production of a 2-methyl-4-halobut-2-en-1-al having the formula O=CH—C(CH_3)=CH—CH_2—Hal where Hal denotes chlorine or bromine by reacting at a temperature in the range of −10°C. to +100°C. in a reaction mixture consisting essentially of

A. a compound selected from the group consisting of 2-methylbut-3-en-1-al-2-ol, diacetals thereof of alkanols having one to four carbon atoms, acetals thereof of alkanediols having two to four carbon atoms and acylates thereof of monocarboxylic acids having two to four carbon atoms; with

B. a hydrogen halide selected from the group consisting of hydrogen chloride and hydrogen bromide in the form of a concentrated aqueous solution of said hydrogen halide, and

C. in the presence of finely divided copper or a copper salt.

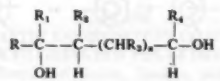
3,940,446

DEHYDROGENATION OF ALCOHOLS

Samuel Kahn, Rutherford, N.J., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 8, 1971, Ser. No. 160,902
Int. Cl.[2] C07C 45/16
U.S. Cl. 260—603 HF 6 Claims

1. A process for the continuous liquid phase dehydrogenation of a primary or secondary alcohol which also contains a tertiary hydroxy group said alcohol possessing the following formula:



where R and R_1 are independently selected from the group consisting of alkyl, aryl, aralkyl and cycloalkyl, R_3, R_3 and R_4 are independently selected from the group consisting of hydrogen, alkyl, aryl, aralkyl and cycloalkyl, and n is an integer of from 0 to 10, to the corresponding aldehyde or ketone without loss of said tertiary hydroxy group, which comprises effecting said dehydrogenation at a temperature of from about 200° to about 350°C. under a vacuum of from about 40 to about 250 mm. Hg. in contact with a stirred suspension of an alcohol dehydrogenation catalyst comprising cupric oxide in a mineral oil having a normal boiling point above about 350°C and an end boiling point within the range of from about 450° to about 550°C, and continuously recovering the aldehyde or ketone.

3,940,447
PROCESS FOR HYDROFORMYLATION OF OLEFIN HYDROCARBONS

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 32,411, April 27, 1970, abandoned. This application Dec. 7, 1973, Ser. No. 422,957
Int. Cl.[2] C07C *45/08*
U.S. Cl. 260—604 HF 9 Claims

1. In the process for the hydroformylation of olefin hydrocarbons of 2 to about 16 carbon atoms the improvement which comprises conducting said hydroformylation in contact with a catalyst composition consisting of a major amount of a solid, sodium form crystalline alumino-silicate support, said crystalline aluminosilicate support having a silicato alumina mole ratio of from about 2:1 to 12:1, a sodium oxide-to-alumina mole ratio of from about 0.7:1 to 1.1:1 and pore diameters of from about 6 to 15 Angstroms, and a minor amount of providing about 0.2 to about 0.6 weight per cent rhodium, said rhodium composition having a mole ratio of ligand to metal of about 1.5:1to 3:1, said ligand being R_3P in which each R is independently selected from the group consisting of phenylalkyl, alkylphenyl, phenyl, and alkyl groups having from 2 to about 16 carbon atoms.

3,940,448
FORMALDEHYDE-DIAROMATIC ETHER REACTION PRODUCTS

Edgar F. Hoy, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

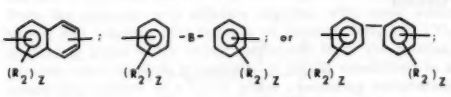
Filed Feb. 25, 1974, Ser. No. 445,514
Int. Cl.[2] C07C *149/32*
U.S. Cl. 260—609 F 4 Claims

1. A cogeneric liquid formaldehyde aromatic ether reaction product having the formulae

$$R_1 - A \frac{}{} CH_2 - (OCH_2)_y A \frac{}{}_x CH_2 - (OCH_2)_y R_3$$

(I)

wherein each A is an independently selected aromatic radical having the formula



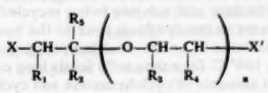
each R_1 represents an independently selected radical from the group consisting of hydrogen, $-CH_2-OCH_2-_yR_3$ each R_2 represents an independently selected radical consisting of R_1, halogen or an alkyl group of 1 to 10 carbon atoms; R_3 represents a radical selected from the group consisting of hydrogen, methoxy, ethoxy, propoxy or —A—H when y is 1 or greater than 1 and methoxy, ethoxy, propoxy and —A—H when *y* is 0; *x* represents an integer from 0 to 60; *y* represents an integer from 0 to 4; *z* represents an integer from 0 to 2; and, B represents oxygen or sulfur, which may contain unreacted amounts up to 50% by weight of unreacted aromatic HAH of the total condensation product.

3,940,449
β,β-CHLORINATED AND BROMINATED ETHERS

Corwin J. Bredeweg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 15, 1972, Ser. No. 306,916
Int. Cl.[2] C07C *43/18*
U.S. Cl. 260—611 B 12 Claims

1. A compound



wherein X and X′ are independently chlorine or bromine, *n* is an integer from 1 to 4, one of R_1 and R_2 is hydrogen or a hydrocarbon group and the other is a hydrocarbon group, said hydrocarbon group being the residue of a C_8–C_{18} monoolefin or of a C_8–C_{16} vinyl aromatic, provided that the sum of the carbon atoms in R_1 and R_2 is from 6 to 16, one of R_3 and R_4 is hydrogen or methyl and the other is hydrogen, phenyl or an alkyl, monohydroxyalkyl, monochloroalkyl or monobromoalkyl group of from 1 to about 7 carbon atoms and R_5 is hydrogen, methyl, chloromethyl or bromomethyl.

3,940,450
PREPARATION AND RECOVERY OF ETHERS

Kung-You Lee, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 16, 1974, Ser. No. 533,057
Int. Cl.[2] C07C *41/12*, *41/00*
U.S. Cl. 260—614 A 14 Claims

1. The method which comprises
distilling a reaction mixture containing methanol and methyl t-butyl ether in a first distilling operation thereby forming first azeotrope overhead containing methanol and methyl t-butyl ether and first azeotrope bottoms containing methanol;
distilling said first azeotrope overhead containing methanol and methyl t-butyl ether in a second distillation operation in the presence of n-pentane thereby forming second azeotrope overhead containing methanol and n-pentane and second azeotrope bottoms containing desired product methyl t-butyl either; and
withdrawing said second azeotrope bottoms containing desired product methyl t-butyl ether.

3,940,451
PROCESS OF RECOVERING BHT VALUES FROM MOTHER LIQUORS OF THE CRYSTALLIZATION OF BHT OBTAINED BY ALKYLATING P-CRESOL WITH ISOBUTYLENE

Heliodoro Monroy, Insurgentes Sur 591-7th Floor, Mexico City, Mexico

Filed Sept. 6, 1974, Ser. No. 503,569
Int. Cl.[2] C07C *39/06*
U.S. Cl. 260—624 A 8 Claims

1. A process for the recovery of 2,6di-tert-butyl-p-cresol from a starting non-crystallizable mother liquor obtained from the crystallization of 2,6-di-tert-butyl-p-cresol produced by the alkylation of p-cresol with isobutylene, said starting non-crystallizable mother liquor comprising diisobutylene and lower and higher cresol polymers which inhibit crystallization of 2,6-di-tert-butyl-p-cresol, which comprises the steps of:
a. thermally cracking said starting mother liquor at a temperature of from 200°C to 250°C, in the presence of an acid catalyst, in order to crack the lower and higher cresol polymers;
b. steam distilling the cracked mixture to remove the diisobutylene in the presence of an acid catalyst;

c. realkylating the cresols in the steam distilled reaction mixture by the addition of isobutylene; and
d. crystallizing the thus formed additional 2,6-di-tert-butyl-p-cresol.

3,940,452

ISOMERIZATION OF C_{10}-C_{70} OLEFINS OF VINYLIDENE STRUCTURE TO OLEFINS OF VINYL STRUCTURE

Werner Strassberger, Gersthofen, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 15, 1974, Ser. No. 497,943
Claims priority, application Germany, July 6, 1974, 2432586
Int. Cl.² C07C 5/30
U.S. Cl. 260—683.2 4 Claims

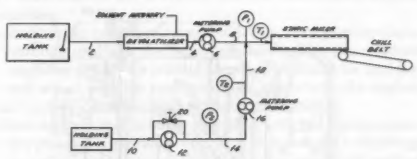
1. A process for the manufacture of olefins having vinyl structure from olefins with vinylidene structure by isomerization, which comprises heating an olefin having vinylidene structure and containing from 10 to 70 carbon atoms in the molecule at a temperature of from 80° to 350°C in the presence of a silicate having sheet structure, pumice, or titanium dioxide as isomerization catalyst.

3,940,453

METHOD OF PREPARING HOMOGENEOUS THERMOSETTING POWDER PAINT COMPOSITION

Santokh S. Labana, Dearborn Heights; Amos Golovoy, Inkster, and Henk van Oene, Detroit, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1973, Ser. No. 422,230
Int. Cl.² C08L 63/00
U.S. Cl. 260—836 13 Claims



1. A method of preparing a powder paint composition comprising
A. Introducing a liquid composition comprising a solution of inert solvent and an acrylic copolymer containing crosslinkable functional groups, said copolymer having a glass transistion temperature in the range of 40°C to 90° C and a number average molecular weight of between about 1,000 to 15,000 into a devolatilizing zone wherein:
1. the liquid composition is heated above the melting point of said copolymer and above the temperature at which said inert solvent begins to vaporize, but below the point at which degradation occurs;
2. the volatile components are withdrawn from the volatilizing zone; and
3. the molten nonvolatile components are collected;
B. Feeding said nonvolatile components under pressure at a selected flow rate into a static mixer comprising a conduit containing fixed elements;
C. Simultaneously feeding a molten crosslinking agent for said copolymer into said static mixer under substantially the same pressure as said nonvolatile components and at a flow rate calculated to provide the mixture with between about 70% and about 130% of a stoichiometric quantity of crosslinking agent for said copolymer;
D. Passing said molten nonvolatile components and said crosslinking agent through said static mixer, which is maintained at a temperature above the melting point of all components but below about 600°F, the average residence time of the mixture within the static mixer being less than about one-half the gel time for the crosslinkable system;
E. Cooling said mixture of nonvolatile components and crosslinking agent to form a solid material; and
F. Pulverizing said solid material to form a powder.

3,940,454

TRANSPARENT HIGH IMPACT GRAFT POLYMERS

David O. Conley, Newark, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 272,254, July 17, 1972, abandoned, Continuation-in-part of Ser. No. 86,952, Nov. 4, 1970, abandoned, Continuation-in-part of Ser. No. 667,655, Sept. 14, 1967, abandoned. This application May 6, 1974, Ser. No. 467,321
Int. Cl.² C08L 9/00, 9/06
U.S. Cl. 260—880 R 3 Claims

1. A transparent graft polymer prepared in a manner whereby the refractive index of the polymerized grafting monomers, after polymerization in the presence of the substrate, is substantially equal to the graft polymer substrate, said graft polymer prepared by polymerizing about 90 percent by weight of methacrylonitrile in the presence of about 10 percent by weight of a rubbery polymeric substrate selected from the group consisting of conjugated diene homopolymers and copolymers consisting of a conjugated diene and up to about 40 percent by weight of a monomer selected from the group consisting of styrene, substituted styrene, alkyl acrylate and alkyl alkacrylate.

3,940,455

HYDROCARBON POLYMERS

Martin H. Kaufman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1970, Ser. No. 68,575
Int. Cl.² C08L 23/22, 27/18
U.S. Cl. 260—888 4 Claims

1. A method of compounding an elastomeric polymeric composition which comprises
dissolving an elastomeric polymer selected from the group consisting of butadiene-acrylonitrile rubber, ethylene-propylene rubber, butyl rubber, styrene-butadiene rubber, polyisoprene rubber, polychloroprene rubber, in a solvent selected from the group consisting of benzene, toluene, xylene, hexane, cyclohexane, petroleum ether to form a solution;
incorporating into said solution polytetrafluoroethylene to form a suspension;
coprecipitating said polymer and said polytetrafluoroethylene by mixing said suspension with a nonsolvent for said polymer whereby a precipitate forms;
separating said precipitate from said solvent and drying said precipitate.

3,940,456

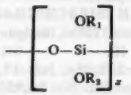
THERMOPLASTIC COMPOSITION COMPRISING PVC AND CHLORINATED POLYETHYLENE

Hans-Helmut Frey, Bad Soden, Taunus, and Helmut Klug, Aystetten, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 421,528, Dec. 4, 1973, abandoned. This application Jan. 10, 1975, Ser. No. 539,946
Claims priority, application Germany, Aug. 31, 1973, 2343983
Int. Cl.² C08L 23/28
U.S. Cl. 260—897 C 6 Claims

1. Thermoplastic composition essentially consisting of
a. 98 to 50% by weight of a vinyl chloride polymer and
b. 2 to 50% by weight of a chlorinated low pressure polyethylene having a chlorine content of 25 to 42% by weight, a reduced specific viscosity of 1 to 5 dl/g, a residue value of 2 to 40%, measured by extraction in a 1 : 1 mixture of toluene and acetone, and a swelling value of 10 to 70%,

measured in methylcyclohexane, the chloro-polyethylene being prepared by chlorination of low pressure polyethylene in water in the presence of 0.1 to 2% by weight of silicic acid and 0.01 to 1.0% by weight of siloxane oil consisting of the recurring unit



in which R_1 and R_2 each represent an alkyl radical, an aryl radical or an aralkyl radical, and x is an integer of from 10 to 10,000 the percentages being calculated on the polyethylene, at a chlorination temperature of from 50°C to 130°C, at least 10% by weight of the chlorine being incorporated at a temperature of from 120° to 130°C.

3,940,457

N-(N,N-DISUBSTITUTED-AMINOMETHYLIDENE)-(THIONO)THIOL-PHOSPHORIC ACID ESTERS AMIDES

Hellmut Hoffmann, Wuppertal; Ingeborg Hammann, Cologne, and Günter Unterstenhöfer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

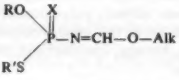
Continuation-in-part of Ser. No. 345,399, March 27, 1973. This application Sept. 12, 1974, Ser. No. 505,440

Claims priority, application Germany, Apr. 6, 1972, 2216552

Int. Cl.² C07F 9/24; A01N 9/36

U.S. Cl. 260—943 **7 Claims**

1. A phosphorylated iminoformic acid alkyl ester of the formula



in which

R is alkyl with 1 to 6 carbon atoms,

R′ is alkenyl or alkynyl with up to 6 carbon atoms, lower alkylmercapto-lower alkyl, N-monomethylcarbamoylmethyl or N-mono-ethylcarbamoylmethyl,

X is oxygen or sulfur, and

Alk is an alkyl radical with 1 to 6 carbon atoms.

3,940,458

1-CARBAMOYL VINYL PHOSPHATES

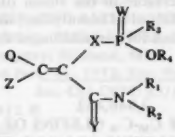
Jerry G. Strong, Fanwood, and Roger P. Napier, Somerville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 230,475, Feb. 29, 1972, abandoned. This application Jan. 10, 1973, Ser. No. 322,316

Int. Cl.² C07F 9/113

U.S. Cl. 260—943 **10 Claims**

1. A compound having the following general formula:



where X, Y and W are oxygen or sulfur, and R_1, R_2, R_3 and R_4 are each a radical selected from the group consisting of hydrogen, branched or unbranched alkyl (C_1–C_8), cycloalkyl (C_3–C_8), alkenyl (C_2–C_8), alkoxy (C_1–C_8), aryl, aralkyl (C_7–C_{14}), acetyl, carbalkoxy, alkylmercapto (C_1–C_8), carbamoyl (mono and dialkyl) and combinations thereof and which radical may have substituted thereon a member or members of the group consisting of hydroxy, halogen, alkoxy, cyano, carbalkoxy and combinations and multiples thereof and Q and Z are selected from the group consisting of R_1, R_2, R_3 and R_4 or from the group consisting of halogen (Cl, Br, F), cyano and alkylsulfonyl.

3,940,459

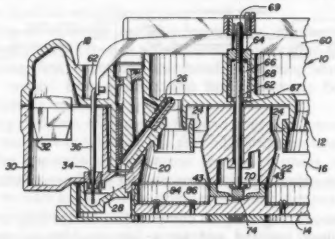
MEANS AND METHOD FOR SECURING A METERING ROD LIFTER CAM ON A THROTTLE SHAFT OF A CARBURETOR

Larry J. Tipton, Florissant; Donald A. Rebmann, Fenton, and Donald A. Reise, St. Ann, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,282

Int. Cl.² F02M 11/02

U.S. Cl. 261—23 A **7 Claims**



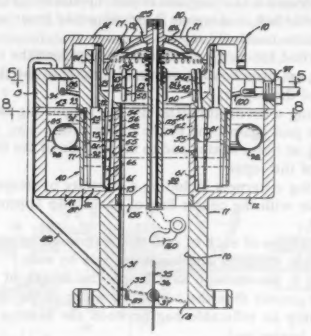
1. An internal combustion engine carburetor comprising a body structure having a pair of spaced parallel mixture conduits, a throttle valve mounted across each of the mixture conduits to control the flow of air through the respective conduit, a throttle shaft extending through the mixture conduits and having an end portion projecting from one side of the body structure, means connected to said end portion for operation of said throttle shaft, a fuel passage to each of the mixture conduits each fuel passage having a fuel metering jet therein, a metering rod positioned within each of the metering jets and permitting an increased flow of fuel through the associated fuel passage when moved in an upward direction, a generally horizontally extending carrier arm extending between and connected to said metering rods for movement of said metering rods in a generally vertical direction, a push rod operatively connected to said arm and having its lower end positioned in the vicinity of said throttle shaft, a pivotally mounted cam follower engaging the lower end of the push rod, a cam on said throttle shaft in engagement with said follower, and means mounting said cam on said shaft, said mounting means including a cutaway portion of said shaft having a length greater than the thickness of said cam and an axially extending slot having an end communicating with said cutaway portion, said cam being C-shaped and having an inwardly projected tongue fitting within said slot and securing said cam in position on said shaft.

3,940,460

AIR-VALVE TYPE CARBURETOR

Clinton L. Graybill, P.O. Box 148, Superior, Mont. 59872

Filed Feb. 14, 1974, Ser. No. 442,383
Int. Cl.² F02M 7/06, 7/24
U.S. Cl. 261—40 21 Claims



1. A carburetor for a vehicle internal combustion engine, comprising:

a carburetor body having an induction duct passing therethrough in which the induction duct has an intermediate segment defining a mixing chamber in which air and fuel are mixed prior to passage of the mixture to the engine;

said mixing chamber having a peripheral wall;

a fuel delivery means communicating with the mixing chamber having a plurality of fuel nozzles at fuel discharge locations angularly spaced about the peripheral wall of the mixing chamber for delivering metered amounts of fuel into the mixing chamber at the plurality of locations;

wherein the fuel delivery means includes (1) a fuel reservoir vented to the atmosphere, (2) a fuel well in liquid communication with the fuel reservoir and in vapor communication with the mixing chamber, and (3) a fuel line between the well and the nozzles for supplying fuel to the nozzles in which the amount of fuel supplied to the mixing chamber varies in relation to the difference between the atmospheric pressure and the mixing chamber vacuum pressure as reflected by the difference in fuel levels between the fuel reservoir and the fuel well;

a throttle valve mounted in the induction duct downstream of the mixing chamber for regulating the flow of said mixture to the engine;

a pressure sensitive air valve mounted in the induction duct at an entrance to the mixing chamber for regulating the amount of air flow into the mixing chamber in relation to the magnitude of vacuum pressure prevailing in the mixing chamber; and

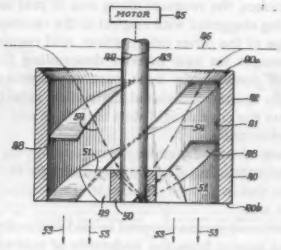
said air valve having a movable disc centrally mounted in the mixing chamber entrance for directing the air entering the mixing chamber in a path radially outward to the periphery of the disc and into the mixing chamber along the peripheral wall of the mixing chamber past the plurality of fuel discharge locations to receive fuel and for creating a pressure depression in the mixing chamber behind the valve disc to cause the air to flow radially inwardly from the peripheral wall forming a turbulent eddy in the pressure depression to thoroughly mix the fuel and air.

3,940,461

LIQUID AERATION METHOD AND PUMP APPARATUS WITH STATIONARY VANES AND DOWNWARD FLOW

Ernest J. Martin, Rolling Meadows, and Arvid A. Molitor, Elgin, both of Ill., assignors to Ernest J. Martin, Rolling Meadows, Ill.

Filed Feb. 15, 1974, Ser. No. 442,836
Int. Cl.² B01F 3/04
U.S. Cl. 261—91 8 Claims



1. In a pump for use in aerating or cooling a body of liquid such as water having a normal surface level, said pump being of the type having rotationally stationary tube means about a vertical axis, a device connected to the tube means to support the tube means in the liquid with the bottom of the tube means below the normal surface level, power drive means, impeller means connected to said drive means and positioned below said normal surface level, said impeller means having blades pitched in a predetermined direction, and vane means within said tube means and affixed thereto, at least part of said vane means being pitched in the opposite of said predetermined direction, said vane means defining a central opening, said impeller means being positioned within said central opening, the improvement comprising:

the tube means having a top below said normal surface level, and

said power drive means rotating said impeller means in a direction such as to force the liquid downwardly in the tube means.

3,940,462

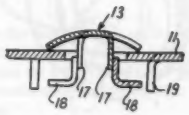
BUBBLE TRAY AND CAP ASSEMBLY FOR FLUID CONTACT APPARATUS

Vlastimil Braun, and Oto Vitek, both of Brno, Czechoslovakia, assignors to Chepos Zavody Chemicho a Potravinarskeho Strojirenstvi, Generalni Reditelstvi, Brno, Czechoslovakia

Continuation of Ser. No. 856,955, Sept. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 464,982, June 18, 1965, abandoned. This application May 31, 1973, Ser. No. 365,576

Claims priority, application Czechoslovakia, June 27, 1964, 3710-64. The portion of the term of this patent subsequent to May 20, 1986, has been disclaimed.

Int. Cl.² B01D 3/20
U.S. Cl. 261—114 VT 5 Claims



1. A bubble tray and cap assembly for fluid contact apparatus for effecting intimate contact between a rising gaseous and/or vaporous phase and a descending liquid phase, comprising

A. a tray member having a plurality of elongated slots arranged in axially parallel spaced relationship adjacent each other

B. a plurality of elongated caps covering said slots, and mounted therein to be reciprocally movable transverse to the plane of said tray,

a. each cap having opposite lengthwise extending said portions above the upper surface of said tray member,

1. each of said portions having alternating parts downwardly bent forming a row of longitudinally spaced recesses, the recesses along one of said side portions being staggered with respect to the recesses along the edge of the other side portion, said recesses forming passages for said heavier descending liquid phase, said downwardly bent part constituting longitudinally spaced individual depending members spaced from the edge of said slots to deflect said liquid phase downwardly.

2. each of said depending members having a first portion extending downwardly through the respective slot and in a plane parallel to the longitudinal axis of the slot,

3. abutment means secured to said depending members and spaced from the underside of said tray member so as to engage said underside and limit the upward movement of the respective cap when lifted by said rising phase, and

b. said caps being arranged within said slots so that the lengthwise extending edges along one side of one of said caps and the downwardly bent parts along the opposite side of the next adjacent one of said caps lie along common lines transverse to the elongated axis of said slots to cause flow of said liquid phase from the one extending edge into the recess of the next adjacent cap and downwardly in the passage defined by said depending respective member.

3,940,463

RELATING TO THE REPAIR OF TIRES

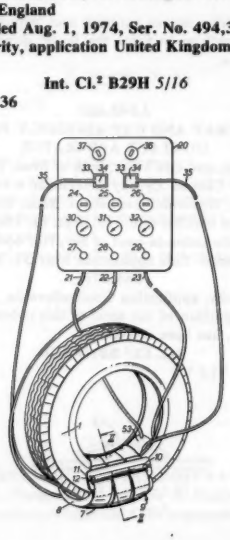
Alfred William Nicholson, 63 Addington Road, West Wickham, Kent, England

Filed Aug. 1, 1974, Ser. No. 494,353

Claims priority, application United Kingdom, Aug. 1, 1973, 36601/73

Int. Cl.² B29H 5/16

U.S. Cl. 264—36 **6 Claims**



1. Apparatus for use in curing a tire repair, comprising an inner heater pad to be applied to the inside of the tire in the area of the repair, a core to be positioned within said tire to support said inner heater pad against the inside of said tire, an outer heater pad to be applied to the outside of said tire in the area of said repair, a flexible harness to be positioned to extend through the center of said tire and around the outside of said tire in the area of said repair, said flexible harness including a plurality of straps to be positioned around said tire with the center-line of each said strap approximately radial and a buckle including an opening to admit a loop of each strap, said loops being side by side, and a pin to be inserted through said loops, the length of said pin being greater than the combined width of said straps, an inflatable bag to be positioned between said harness and said outer heater pad, means for pressurizing said inflatable bag, and means for heating said inner and outer heater pads to cure said repair.

5. A method for curing a tire repair comprising the steps of:

applying an inner heating pad to the inside of the tire in the area of the repair;

positioning a core within the tire for supporting said inner heater pad against the inside of the tire;

applying an outer heater pad to the outside of the tire in the area of the repair;

positioning a harness including a plurality of straps around the tire with the center line of each strap approximately radial;

passing a loop of each of said straps through an opening in a buckle whereby said loops are side by side;

inserting a pin through said loops, the length of said pin being greater than the combined width of the straps;

positioning an inflatable bag between the harness and the outer heater pad;

pressurizing the inflatable bag; and

heating the inner and outer heater pads to cure the repair.

3,940,464

PRODUCTION OF LACES AND GRANULES OF FIBRE-REINFORCED THERMOPLASTICS

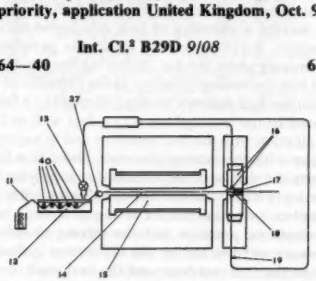
John Howard Davis, deceased, late of Bengeo, England; Richard C. Harwood, executor, Chalfont St. Giles, and Barbara Davis, executrix, Hertford, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 27, 1974, Ser. No. 510,136

Claims priority, application United Kingdom, Oct. 9, 1973, 47077/73

Int. Cl.² B29D 9/08

U.S. Cl. 264—40 **6 Claims**



1. A method for the simultaneous production of a plurality of laces of fibre-reinforced thermoplastic polymers which comprises:

a. impregnating each of a plurality of rovings with a powdered thermoplastic polymer by applying an amount of the powder to the roving;

b. heating each impregnated roving in a separate chamber so as to melt the polymer which it contains;

c. heating, before or after the heating specified in (b), all the rovings in a common chamber and in contact with a common pool of molten polymer,

d. passing each roving through its own separate die to consolidate the roving into a lace with the removal of excess polymer into the melt pool, and

e. controlling the size of the melt pool by detecting the extent of the pool with at least one suitably placed detector and by correspondingly adjusting the amount of pow-

dered thermoplastic polymer applied to the roving in response to changes in the extent of the melt pool whereby a lace of uniform composition is produced.

3,940,465

METHOD FOR REGULATING THE HARDENING TIME OF A PLASTIC MASS IN THE MOLD OF AN INJECTION MOLDING MACHINE

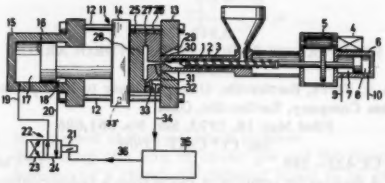
Hans Ulrich Hauser, Niederweningen, and Eduard Hartmann, Urdorf, both of Switzerland, assignors to Bucher-Guyer AG, Maschinenfabrik, Niederweningen, Switzerland

Filed Dec. 17, 1973, Ser. No. 425,607

Claims priority, application Germany, Jan. 3, 1973, 2300171

Int. Cl.² B29F *1/00*

U.S. Cl. 264—40 5 Claims



1. A method of regulating the setting time of a thermosetting plastic mass in a mold of an injection molding machine, which mold is constituted by at least two mold halves defining therebetween a mold parting plane and forming a mold cavity, comprising the steps of injecting a thermosetting plastic mass into the mold cavity of the mold, the pressure of the mass in the mold cavity initially causing relative opening movement between the two mold halves, directly sensing the magnitude of a mold gap at the mold parting plane caused by such relative opening movement, and regulating the residence time and therefore the setting time of the thermosetting plastic mass in the mold cavity in response to the sensing of the magnitude of such mold gap and as a function of the recovery of such mold gap due to reclosing of the mold halves caused by the shrinkage of the thermosetting plastic mass as the latter sets.

3,940,466

METHOD OF PROVIDING A STRUCTURAL SHAPE

King W. Evers, Livermore, Calif., and George H. Larsen, Las Vegas, Nev., assignors to King W. Evers, Livermore, Calif. and George H. Larsen, Las Vegas, Nev.

Filed Dec. 7, 1973, Ser. No. 422,771

Int. Cl.² B29G *7/00*

U.S. Cl. 264—45.3 4 Claims

1. A method of providing a structural shape comprising:

a. introducing dry waste paper into an operating hammer mill to make dry paper fibers;

b. withdrawing said dry paper fibers from said mill;

c. passing said dry paper fibers through a screen;

d. mixing said dry paper fibers with a thermosetting resin binder in water in the proportion by weight of paper fibers of from about 3–35% water and from 3–35% binder;

e. pressing the mixture at a pressure of from 3–600 psi while permitting said water to escape, and;

f. heating said mixture while under said pressure to a temperature of 250°–375°F. for from three to thirty minutes to cure said resin binder and thereby form said structural shape.

3,940,467

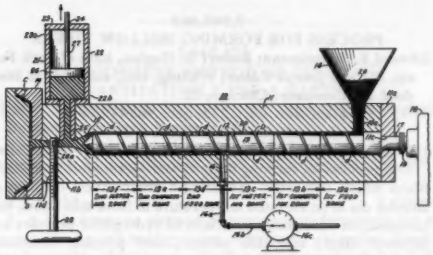
METHOD OF INJECTION MOLDING A STRUCTURAL FOAMED THERMOPLASTIC ARTICLE HAVING A UNIFORM SWIRL-FREE AND INDENT-FREE SURFACE

Armand E. Brachman, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 381,289, July 20, 1973, abandoned. This application Dec. 18, 1974, Ser. No. 534,102

Int. Cl.² B29D *27/00*; B29F *1/00*

U.S. Cl. 264—45.5 8 Claims



1. In a method for producing a foamed thermoplastic structural article characterized by a smooth, uniform swirl-free surface, wherein a substantially uniform foamable mixture of water and a melted thermoplastic resin is formed in an extruder and said mixture is advanced under a predetermined pressure from the extruder to an accumulator and subsequently to a cavity in a mold, which cavity is at a lower pressure than the pressure applied to the foamable mixture in the extruder and in the accumulator, whereby the water in the form of steam causes the melted thermoplastic resin to foam and expand to completely fill the cavity in the mold, the method comprising restricting the quantity of said water introduced into said melted thermoplastic resin in said extruder within a range of between about 0.1 to about 2.0 weight percent of the charge weight of the thermoplastic resin in the extruder.

3,940,468

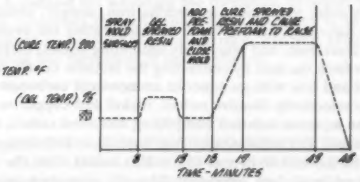
PROCESS FOR LAMINATING RIGID POLYURETHANE FOAM TO A GELLED POLYESTER RESIN

Reginald V. Tunstall, Santa Paula, Calif., assignor to Fibre-Thane Homes, Inc., Van Nuys, Calif.

Filed July 24, 1972, Ser. No. 274,200

Int. Cl.² B29D *27/00*; B32B *27/40*; C08G *18/14*

U.S. Cl. 264—46.6 5 Claims



1. A process for laminating a rigid polyurethane foam to a gelled polyester resin comprising adding two mixtures to a pre-foam mixture of a polyisocyanate and polyol with sufficiently high functionality to form a rigid foam; said first mixture comprising:

about 2½% by weight of said polyisocyanate and polyol of an unsaturated polyester laminating resin, between 1 and 2% by weight based upon the total weight of added polyester resin of an organic amine catalyst, about 0.75% by weight based upon the total weight of added polyester of cobalt octoate, and said second mixture comprising:

about 2½% by weight based upon the total weight of said polyisocyanate and polyol of a polyester resin, between about 1.5 and 3% by weight based upon the total weight of added polyester resin of benzoyl peroxide and between about 0.15 and 0.75% by weight based upon the total weight of added polyester of dimethyl aniline; contacting the pre-foam mixture to a gelled polyester resin; curing the gelled polyester and pre-foam at elevated temperatures to produce a polyester-polyurethane foam laminate of improved adhesion.

3,940,469

PROCESS FOR FORMING HOLLOW FIBERS

Edward F. Steigelmann; Robert D. Hughes, both of Park Forest, Ill., and Joseph Gabor, Whiting, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Nov. 26, 1973, Ser. No. 419,091
Int. Cl.[2] D01D *5/04, 5/24*
U.S. Cl. 264—177 F 12 Claims

1. A process for forming hollow, semi-permeable membrane fibers which comprises extruding a composition through an annular die at an elevated temperature to from said fibers, said composition consisting essentially of hydrophilic polymer and di(lower alkyl) sulfoxide solvent, said polymer consisting essentially of N-alkoxyalkyl polyamide and sufficient water-soluble polyvinyl alcohol to enhance the hydrophilic properties of the polyamide, said composition having a sufficient amount of water to inhibit degradation of the polymer at elevated temperature.

3,940,470

DIRECT RECOVERY OF METALS FROM FLUID ANHYDROUS METAL HALIDES DERIVED FROM MARINE NODULE HALIDATION

William S. Kane, Wicomico; Hugh L. McCutchen, Gloucester Point, and Paul H. Cardwell, Zanoni, all of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Nov. 29, 1972, Ser. No. 310,605
Int. Cl.[2] C01G *3/00, 45/00, 51/00, 53/00*
U.S. Cl. 423—24 16 Claims

6. A process for obtaining metal values from ocean floor nodule ores, the ore comprising as major components the oxides of manganese and iron and as secondary components compounds of copper, cobalt and nickel, the process comprising halidating the nodule ore to form the halides of iron, copper, cobalt, nickel and manganese; vaporizing these halides to form a vaporous mixture comprising as the primary components manganese halide and iron halide and as the secondary components copper halide, cobalt halide and nickel halide; separating the nickel, cobalt and copper by passing the vaporous mixture of halides in contact with elemental manganese in order to precipitate metallic iron, copper, cobalt and nickel directly from the vapor and separating the remaining vapor therefrom; and selectively separating cobalt, nickel and copper from the iron by contacting the metallic cobalt, nickel, copper and iron with an aqueous ammoniacal carbonate solution to selectively dissolve cobalt, nickel and copper so as to form an aqueous solution comprising dissolved cobalt, nickel and copper and substantially free from iron and manganese; whereby the nickel, copper and cobalt values from the ocean floor nodule ore are separated from the primary manganese and iron components, thus rendering the further treatment to obtain these individual values in a pure state more accessible.

7. The process of claim 6 comprising in addition contacting the aqueous solution of nickel, cobalt and copper with a water-immiscible organic solution of a liquid ion exchange agent selected from the group consisting of alpha-hydroxyoximes and 8-hydroxyquinolines to selectively extract a pure metal value.

16. A process for obtaining metal values from ocean floor nodule ore, the ore comprising as major components the oxides of manganese and iron and as secondary components compounds of copper, cobalt and nickel, the process comprising halidating the nodule ore by reacting with a molten alkali metal or alkaline earth metal halide to form the halides of copper, cobalt, nickel and manganese; vaporizing these halides to form a vaporous mixture comprising as the primary component manangese halide and as the secondary components copper halide, cobalt halide and nickel halide; separating the nickel, cobalt and copper by passing the vaporous mixture of halides in contact with elemental manganese in order to precipitate metallic copper, cobalt and nickel directly from the vapor and separating the remaining vapor therefrom; and contacting the metallic cobalt, nickel and copper with an aqueous ammoniacal carbonate solution to dissolve cobalt, nickel and copper so as to form an aqueous solution comprising dissolved cobalt, nickel and copper and substantially free from iron and manganese; whereby the nickel, copper and cobalt values from the ocean floor nodule ore are separated from the primary manganese components, thus rendering the further treatment to obtain these individual values in a pure state more accessible.

3,940,471

REMOVAL OF RADON FROM HYDROCARBON STREAMS

John A. Favre, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 18, 1973, Ser. No. 361,606
Int. Cl.[2] C01F *13/00*
U.S. Cl. 423—249 16 Claims

1. A process for removal of radon from a radon-containing olefin hydrocarbon stream, which comprises

admixing carbon dioxide with said radon-containing olefinic hydrocarbon stream;

contacting the resultant stream with an olefin absorbing agent in a contacting zone to form an olefin/absorbing agent complex;

withdrawing from said contacting zone a first stream comprising said complex;

withdrawing from said contacting zone a second stream comprising radon and carbon dioxide;

passing said first stream to an olefin recovery zone wherein the olefin is separated from said absorbing agent;

withdrawing from said olefin recovery zone an essentially pure olefin as one product of the process;

passing said second stream to a radon recovery zone wherein radon is separated from said carbon dioxide; and

withdrawing from said radon recovery zone radon as a product of the process.

3,940,472

QUATERNARY SULFIDES AND SELENIDES CONTAINING BA OR SR AND SELECTED TRANSITION METALS

Paul Christopher Donohue, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 22, 1974, Ser. No. 472,424
Int. Cl.[2] C01B *19/00, 17/00;* C01F *11/00*
U.S. Cl. 423—511 8 Claims

1. A semiconducting composition with a $BaNiO_3$-type hexagonal crystal structure of the formula

$MM'_{1-y}M''_yX_3$

where

M is Ba or Sr,

M′ is one or more of Ta and Nb,

M″ is one or more of Cr, Mn, Fe, Co, Ni, Cu, Rh and Ir,

X is one or more of S and Se, and

y is 0.33 to 0.5,

with the proviso that, when M is Sr, the compound is of the formula

$SrTa_{0.5}M''_{0.5}S_3$

and M″ is one or more of Cr and Fe.

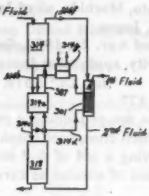
3,940,473
THERMAL CONTROL IN DUAL TEMPERATURE SYSTEMS

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, White Plains, N.Y.

Continuation of Ser. No. 587,365, Sept. 26, 1966, abandoned, which is a continuation of Ser. No. 822,973, June 25, 1959, abandoned, which is a division of Ser. No. 188,925, Sept. 29, 1950, Pat. No. 2,895,803. This application Dec. 30, 1971, Ser. No. 214,494

Int. Cl.² C01B 5/02

U.S. Cl. 423—580 **28 Claims**



1. In a method of the type which involves
a. the heating of a flow of carrier gas and the vaporizing thereinto of a chemically different liquid to be carried thereby, and
b. the subsequent cooling of such flow and condensation of such liquid therefrom after the same has been
c. subjected to treatment, the improvement that:
d. said heating and vaporizing step (a) is effected in a first zone,
e. said cooling and condensing step (b) is effected in a third zone from which said flow and liquid condensate are separately removed,
f. said treatment step (c) is effected in a second zone in which the said flow is further heated and has a further quantity of vapor of said liquid added thereto,
g. said flow is passed in sequence through said first, second and third zones,
h. a quantity of said liquid is brought into physical contact with said flow of gas in said first zone, and
i. heat for effecting the heating and vaporizing in said first zone is obtained from the cooling and condensation in said third zone and such heat is transferred to the flow in said first zone from the flow in said third zone by way of a countercurrent indirect contact heat exchange while maintaining said flows out of contact with each other.

3,940,474
GENERATION OF HYDROGEN

Chester W. Huskins, Huntsville, and Roy E. Patrick, Redstone Arsenal, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1974, Ser. No. 405,152

Int. Cl.² C01B 1/03

U.S. Cl. 423—648 **4 Claims**

1. A method of generating hydrogen gas of high purity as required for chemical laser use, said method comprising:
i. placing a predetermined quantity, in powder form of unsolvated aluminum hydride selected from an unsolvated aluminum hydride that has a maximum absorption in the infrared at about 5.8 microns or that has an x-ray diffracting value of about 1451 in a container which is adapted for operating in an inert or vacuum environment;
ii. providing a heat source that includes a length of wire of predetermined diameter, a high melting point and of a predetermined composition of about 80% nickel and of about 20% chromium, said wire being adapted for electrically heating and said wire being positioned in contact with said unsolvated aluminum hydride under an inert or vacuum environment to rapidly bring said unsolvated aluminum hydride to a decomposition temperature range of from about 180° to about 185°C; and
iii. maintaining said temperature range for sufficient time to effect decomposition of said unsolvated aluminum hydride to liberate a desired quantity of hydrogen gas from said predetermined quantity of unsolvated aluminum hydride.

3,940,475
RADIOIMMUNE METHOD OF ASSAYING QUANTITATIVELY FOR A HAPTEN

Stanley Joseph Gross, Encino, Calif., assignor to Biological Developments, Inc., Encino, Calif.

Continuation-in-part of Ser. No. 45,558, June 11, 1970, abandoned. This application July 7, 1971, Ser. No. 160,559

Int. Cl. A61k 27/04

U.S. Cl. 424—1 **1 Claim**

1. A radioimmune method of assaying quantitatively for a hapten, the hapten having a ring of aromatic character, which ring is capable of having a —N=N— group covalently bonded directly to an atom of said aromatic character ring, which method comprises contacting an aqueous sample containing the hapten under assay, a known quantity of a radioactively labeled marker which incorporates a hapten homologous to the hapten under assay, and an insolubilized antibody specific for the hapten under assay to competitively bind part of said labeled hapten and the hapten contained in said sample to the antibody; incubating the foregoing mixture until a two-phase system is produced comprising an insoluble or solid phase and an aqueous phase, and measuring the radioactivity of at least one of said two phases, the value of said radioactivity being a function of the concentration in said sample of the hapten under assay.

3,940,476
ORAL PREPARATIONS FOR PREVENTING DENTAL PLAQUE

Gerhard J. Haas, Woodcliff Lake, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 239,796, March 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 148,203; May 28, 1971. This application Sept. 24, 1973, Ser. No. 399,879

Int. Cl.² A61K 7/16

U.S. Cl. 424—49 **1 Claim**

1. A method for inhibiting the formation of dental plaque, which comprises topically applying to the teeth as an active ingredient an amount of obtusastyrene, which is effective in inhibiting the formation of dental plaque.

3,940,477
COSMETIC SKIN COLORING COMPOSITIONS CONTAINING AMINATED γ-DIALDEHYDES

Guy Vanlerberghe, Par Claye-Souilly, and Georges Rosenbaum, Asnieres, both of France, assignors to L'Oreal, Paris, France

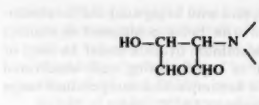
Continuation-in-part of Ser. No. 210,217, Dec. 20, 1971, Pat. No. 3,812,246. This application May 8, 1974, Ser. No. 468,086

Claims priority, application Luxemburg, Dec. 24, 1970, 62317

Int. Cl.² A61K 7/021, 7/42

U.S. Cl. 424—59 **8 Claims**

1. A cosmetic composition for coloring the skin having a pH between 2–5 and consisting essentially of a solution containing
1. 0.5–12 percent by weight of an aminated aldehyde of the formula



wherein R_1 is selected from the group consisting of hydrogen, methyl and hydroxyethyl, R_2 is selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, butyl, hexyl, hydroxyethyl, cyclohexyl, benzyl, (1,2-diformyl-2-hydroxy) ethyl and 2-[(1,2-diformyl-2-hydroxy) ethylamino] ethyl and R_1 and R_2 together with the nitrogen atom to which they are attached form piperidinyl;

2. 0.2–5 percent of a member selected from the group consisting of colza oil, olive oil, peanut oil, cocoa oil and palm oil;
3. 5–40 percent by weight of a lower alkyl ester selected from the group consisting of isopropyl myristate and isopropyl palmitate; and
4. 35–80 percent by weight of ethanol.

3,940,478
PROTEOLYTIC ENZYMES AS ADJUNCTS TO ANTIBIOTIC PROPHYLAXIS OF CONTAMINATED WOUNDS

Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Coventry, Conn.

Filed Apr. 29, 1974, Ser. No. 465,309
Int. Cl.² A61K *37/48*
U.S. Cl. 424—94 **5 Claims**

1. A method for the prophylactic treatment of contaminated but non-infected, open wounds to prevent or at least reduce subsequent development of infection therein which comprises applying to the film of proteinaceous coagulum formed on the surface of said contaminated but non-infected open wounds a proteolytic enzyme in an amount of at least 2,000 N.F. units per wound to break down said film of proteinaceous coagulum.

3,940,479
NOVEL ANTIBIOTIC BN-109 SUBSTANCE, ITS PRODUCTION AND USE

Takashi Shomura, Yokohama; Shoji Omoto, Tokyo; Shinji Miyado, Yokohama; Hiroshi Watanabe, Yokohama; Shigeharu Inouye, Yokohama; Yujiro Yamada, Yokohama, and Taro Niida, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed July 17, 1974, Ser. No. 489,104
Int. Cl.² A61K *35/00*
U.S. Cl. 424—118 **5 Claims**

1. An antibiotic BN-109 substance, which is effective in inhibiting the growth of Gram-negative bacteria and having the following properties:

Appearance: White powder as a free base;

Solubility: Insoluble in common organic solvents and water, slightly soluble in diluted acid and alkaline, acetic acid dimethylformamide and dimethyl sulfoxide, and soluble in acidic methanol and acidic ethanol;

Mobility on filter paper electrophoresis: Behaves as an alkaline substance;

Rf values on TLC:

0.86 (n-butanol-acetic acid-water (2:1:1)),

0.38 (n-butanol-acetic acid-water (4:1:5, upper layer)),

0.66 (n-butanol-pyridine-acetic acid-water (6:4:1:3));

$[\alpha]_D^{25}$ (*c* 0.5, methanol-acetic acid (1:1)): −4°;

Maximum UV absorption bands: Found at 279 mμ ($E_{1cm}^{1\%}$ = 34, in 0.1 N-NaOH, $E_{1cm}^{1\%}$ = 23 in 0.1 N-HCl);

IR absorption bands: Found at 3275, 2590, 1632, 1535, 1408, 1110 (cm^{-1}).

Color reactions:

Positive ninhydrin, Ehrich and Dragendorff;

Negative Sakaguchi, Pauly and Trevelian;

Elementary analysis: C, 52.73%; H, 7.27%; N, 12.77%;

Amino acid composition: α,γ-diamino butyric acid(4), serine(2), glutamic acid(1), glycine(1), alanine(1), valine(3), phenylalanine(1), tryptophan(2), and unknown animo acid(1);

Fatty acids: Contain 30% of acid ether-soluble fatty acids;

Molecular weight: 1900 to 2200

3,940,480
PROCESS FOR PRODUCTION OF STABILIZED POWDERY SECRETIN PREPARATION BY LYOPHILIZATION

Eiichi Suenaga, Kunitachi; Shiaro Tachibana, Narashino, and Nagayasu Sato, Machida, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1973, Ser. No. 354,883
Claims priority, application Japan, May 8, 1972, 47-44566
Int. Cl.² A61K *37/00*
U.S. Cl. 424—177 **5 Claims**

1. A process for producing a stabilized powdery secretin preparation which comprises lyophilizing an aqueous solution of secretin having a pH of 4–7 in the presence of a 2–10% aqueous solution of alanine as carrier for the secretin.

3,940,481
TREATMENT OF HEPATIC COMA WITH ISOMALTITOL

Hubert Schiweck, Obrigheim, Germany, assignor to Suddeutsche Zucker-Aktiengesellschaft, Mannheim, Germany

Filed Feb. 12, 1974, Ser. No. 441,888
Claims priority, application Germany, Feb. 14, 1973, 2307251
Int. Cl.² A61K *31/70*
U.S. Cl. 424—180 **3 Claims**

1. Method for the treatment of hepatic coma, which method comprises administering enterally to the patient an amount of isomaltitol effective for treating said hepatic coma.

3,940,482
SOLUBILIZATION OF THE ZINC SALT OF 1-HYDROXY-2-PYRIDINETHIONE

Paul Sheldon Grand, South Bound Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 136,204, April 2, 1971, Pat. No. 3,785,985. This application Aug. 17, 1973, Ser. No. 389,326
Int. Cl.² A61K *31/555*
U.S. Cl. 424—245 **9 Claims**

1. A clear liquid composition for use as a bactericide or fungicide consisting essentially of ¼ to 20% by weight of the zinc salt of 1-hydroxy-2-pyridinethione, an aliphatic polyamine having the general formula

$$H_2N[CH_2CH_2NH]_nH$$

wherein *n* represents a number from 1 to 5, the weight ratio of said amine to said pyridinethione salt being from about ½ to 1 to about 5 to 1, and the balance being a solvent selected from the group consisting of water, C_2-C_3 monohydric alcohols, C_2-C_3 polyhydric alcohols, dimethyl formamide, dimethylacetamide, dimethylsulfoxide and mixtures thereof.

3,940,483
ANTIBIOTIC COMPOSITIONS AND METHOD

Friedrich Dursch, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 113,105, Feb. 5, 1971, abandoned. This application Oct. 18, 1971, Ser. No. 190,325
Int. Cl.² A61K *31/545*
U.S. Cl. 424—246 **4 Claims**

1. A dry solid antibiotic composition suitable for reconstitution as an injectable upon addition of water which comprises cephradine and sodium carbonate, the sodium carbonate being present in an amount sufficient to assure complete dissolution of the cephradine in an amount of sterile water

which provides a concentration of active cephradine of from about 50 to 500 milligrams per milliliter of water.

3,940,484

INSECTICIDAL COMPOSITIONS AND METHODS OF COMBATTING INSECTS USING SUBSTITUTED IMIDAZOLES

Maurice W. Baker; John C. Kerry; Kenneth J. Nichol; John R. Marshall; David M. Weighton, and Antonin Kozlik, all of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

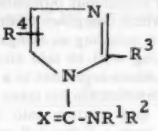
Continuation-in-part of Ser. No. 311,009, Nov. 30, 1972, Pat. No. 3,868,458. This application Nov. 21, 1973, Ser. No. 417,991

Claims priority, application United Kingdom, Dec. 7, 1971, 56781/71; July 26, 1972, 34981/72

Int. Cl.² A01N *9/22*

U.S. Cl. 424—248 7 Claims

1. An insecticidal composition which comprises an insecticidally effective amount of a compound of the formula



in which X is selected from the group consisting of oxygen and sulphur, R^3 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R^4 is selected from the group consisting of alkyl of 1 to 10 carbon atoms and cycloalkyl of 3 to 10 carbon atoms, and R^1 and R^2, together with the nitrogen atom to which they are attached, and R^1 and R^2, together with the nitrogen atom to which they are attached, form a morpholino group optionally containing 1 to 4 methyl substituents attached to carbon atoms of the ring, together with a suitable carrier. The insecticidal compositions are of particular value against insects, e.g., aphids, and against other pests, e.g., acarids.

3,940,485

TREATMENT AND PRE-TREATMENT OF DYSMETRIC DYSLEXIA BY IMPROVING SEQUENTIAL SCANNING AND OCULAR FIXATION ABILITIES AND THERAPEUTIC COMPOUNDS

Harold N. Levinson, 15 Lake Road, Great Neck, N.Y. 11020, and Jan Frank, 45 E. 82nd St., New York, N.Y. 10028

Continuation-in-part of Ser. No. 424,104, Dec. 12, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 528,139

Int. Cl.² A61K *31/13*, *31/24*, *31/52*, *31/54*, *31/445*, *31/495*

U.S. Cl. 424—250 7 Claims

1. A method of obviating eye tracking difficulties for a dysmetric dyslexic patient preparatory to said patient participating in reading or scanning activity, which method is based on the discoveries of a cerebellar-vestibular dysfunction and a resulting sub-clinical eye oscillation indicative of said dysfunction, said method comprising the steps of preceding any reading or scanning by such patient with an administered quantity of a cerebellar-vestibular harmonizing drug selected from the group consisting of cyclizine, cinnarizine, meclizine and buclizine in a dosage effective to suppress input to and within said patient's cerebellar-vestibular circuits, and only allowing reading or scanning activity by said patient during the effective period of said administered drug, whereby the adverse effect of said sub-clinical eye oscillation as input to said patient's cerebellar-vestibular circuits is obviated by said drug during said reading or scanning activity to thereby enhance said patient's eye tracking ability.

3,940,486

IMIDAZOLE DERIVATIVES IN THE TREATMENT OF PAIN

Konrad Fitzi, Neuallschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

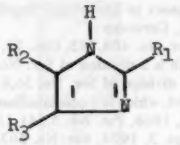
Division of Ser. No. 247,431, April 25, 1972, abandoned. This application Apr. 18, 1974, Ser. No. 461,824

Claims priority, application Switzerland, May 11, 1971, 6967/71; Mar. 22, 1972, 4250/72

Int. Cl.² A61K *27/00*

U.S. Cl. 424—263 2 Claims

1. A pharmaceutical composition for treating pain in mammals comprising an effective amount of a compound of the formula



(I)

wherein R_1 represents isopropyl, sec.butyl, tert.butyl or p-chlorophehyl, one of the groups R_2 and R_3 represents a phenyl group or a p-methoxyphenyl, and the other represents a pyridyl group, or a pharmaceutically acceptable acid addition salt thereof and a pharmaceutical carrier.

3,940,487

INSECTICIDE COMPOSITIONS COMPRISING A CARBAMATE AND A METHYLENEDIOXYPHENYL COMPOUND

Eric Arthur Stuart La Croix, Dorking, and Solomon Ezekiel Mhasalker, Worcester Park, both of England, assignors to Beecham Group Limited, Brentford, England

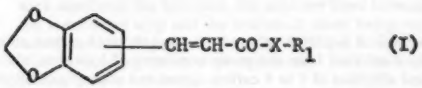
Filed Aug. 28, 1973, Ser. No. 392,301

Claims priority, application United Kingdom, Sept. 13, 1972, 42434/72

Int. Cl.² A01N *9/28*

U.S. Cl. 424—282 8 Claims

1. An insecticidal composition comprising equal parts of (a) a compound of formula (I):



(I)

wherein X is an oxygen atom or a bond joining R_1 to the carbonyl group and R_1 is alkyl of 1 to 12 carbon atoms or alkenyl of up to 12 carbon atoms; and (b) 1-naphthyl-N-methyl carbamate; 1-(2-methoxy-4-prop-2-en)-phenyl-N-methyl carbamate; or 3,5-di-t-butyl-phenyl-N-methyl carbamate; in combination with an insecticidally acceptable carrier.

3,940,488

REPELLENT AMINOALKYLDITHIOCARBAMIC ACIDS

Paul-Ernst Frohberger, Leverkusen, Germany; Otto Ewald Urbschat, deceased, late of Cologne-Mulheim, Germany (by Gertrud Emma Maria Gerda Urbschat, administrator), and Gunther Hermann, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 358,221, May 8, 1973. This application Jan. 2, 1975, Ser. No. 538,427

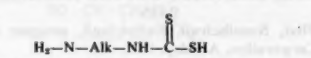
Claims priority, application Germany, May 13, 1972, 2223467

Int. Cl.² A01N *9/12*

U.S. Cl. 424—286 5 Claims

1. A method of repelling rodents or ruminants comprising applying to a rodent or ruminant habitat a repellent amount

of a compound of the formula



(I)

in which

Alk is an alkylene radical of 2 to 6 carbon atoms.

3,940,489

THERAPEUTIC COMPOSITIONS AND METHOD

Herbert Koppe, Ingelheim am Rhein; Albrecht Engelhardt, Mainz (Rhine), and Karl Zeile, Ingelheim am Rhein, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

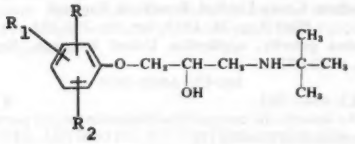
Division of Ser. No. 408,743, Oct. 23, 1973, Pat. No. 3,868,460, which is a division of Ser. No. 294,226, Oct. 2, 1972, which is a division of Ser. No. 36,676, May 12, 1970, Pat. No. 3,740,444, which is a continuation-in-part of Ser. No. 700,376, Jan. 25, 1968, Pat. No. 3,541,130. This application Sept. 3, 1974, Ser. No. 502,634

Claims priority, application United Kingdom, June 15, 1967, 27645/67; Germany, July 25, 1967, 93645; Feb. 6, 1967, 91070; June 15, 1967, 93025

Int. Cl.² A61K *31/24*

U.S. Cl. 424—309 **10 Claims**

1. A composition having bradycardia and isoproterenol antagonistic activity comprising a small but effective amount of at least one active compound selected from the group consisting of racemates of 1-phenoxy-2-hydroxy-3-tert.-butylamino propanes of the formula



wherein R is COOR′ where R′ is alkyl of 1 to 4 carbon atoms; R_1 is selected from the group consisting of hydrogen, alkoxy and alkylthio of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms and R_2 is selected from the group consisting of hydrogen, halogen and alkyl and alkoxyl of 1 to 4 carbon atoms, their optically active isomers and their non-toxic, pharmaceutically acceptable acid addition salts of said racemates and said optically active isomers and a major amount of a pharmaceutical carrier.

3,940,490

MEDICAMENTS HAVING PSYCHOTROPIC PROPERTIES

M. Antoine Stenger; Henri Cousse, and M. Gilbert Mouzin, all of Castres, France, assignors to Pierre Fabre S.A., Castres, France

Continuation of Ser. No. 264,501, June 20, 1972. This application Nov. 21, 1974, Ser. No. 525,951

Claims priority, application France, June 21, 1971, 71.22575; June 5, 1972, 72.20391

Int. Cl.² A61K *31/165*

U.S. Cl. 424—230 **4 Claims**

3. A method of reducing convulsions in a host which comprises administering to the host an anticonvulsant amount of an N—C_1 to C_4-alkyl-5-bromo-ortho-cresotamide.

3,940,491

BACTERIAL SOURCE OF VITAMIN K FOR ANIMAL FEEDS

Richard E. Crutcher, Waukegan, and Victor W. Winkler, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 25, 1975, Ser. No. 571,828

Int. Cl.² A23K *1/00*; A23L *1/30*

U.S. Cl. 426—2 **5 Claims**

1. A method for maintaining a proper level of vitamin K in animals comprising the steps of mixing a bacterial source of said vitamin K with an animal's feed and feeding said mixture to an animal.

3,940,492

CONTINUOUS FERMENTATION PROCESS

Lars Karl Johan Ehnstrom, Tullinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed June 25, 1974, Ser. No. 483,007

Claims priority, application Sweden, July 9, 1973, 7309617

Int. Cl.² C12C *11/04*, *11/08*

U.S. Cl. 426—16 **8 Claims**

1. In carrying out continuous fermentation in a wort substrate, the method which comprises feeding a flow of micro-organisms in a circuit including an elongated closed channel, continuously supplying wort to said circuit, subjecting the mixture of wort and micro-organisms to a centrifugal separating operation after fermentation has taken place in the circuit, thereby separating said mixture into three components, namely, fermented wort, a living cell mass and impurities, separately discharging said impurities component from the centrifugal separating operation, and continuously and separately discharging from the separating operation said fermented wort component and said living cell mass including living cells formed in said circuit.

3,940,493

NON-PROTEIN NITROGEN FEED PRODUCT AND METHOD FOR PRODUCING THE SAME

Wayne F. Fox, Des Moines, Iowa, assignor to Triple "F", Inc., Des Moines, Iowa

Continuation of Ser. No. 278,572, Aug. 7, 1972, abandoned. This application Dec. 13, 1973, Ser. No. 424,506

Int. Cl.² A23K *1/22*

U.S. Cl. 426—69 **6 Claims**

1. The method of producing a palatable, nontoxic and substantially neutral pH food product for feeding ruminant animals comprising the steps of:

a. mixing together a predetermined quantity of an edible, ungelatinized starch-bearing food material selected from the group consisting of corn, sorghum, barley, oats, wheat, hay and silage, a predetermined amount of at least one nonprotein nitrogenous substance selected from the group consisting of urea, biuret, ethylene urea and ammonium carbamate, and a predetermined amount of bentonite,

b. the moisture content of the mixture being less than about 15% by weight, the amount of said nonprotein nitrogenous substance by weight in said mixture being about four times greater than the weight of the bentonite, and the starch bearing food being within a range of from 40.6 to 81.25 percent by weight so that the resultant food product has a total protein equivalent of from 50 to 100 percent by weight,

c. providing a confined path,

d. introducing the mixture at ambient temperature into one end of said confined path,

e. compressing the mixture over the full course of said path under progressively increasing compressive pressures to progressively heat the mixture by frictional heat only to a temperature of from 260°F. to 320°F., and then

f. substantially instantaneously reducing the compressive pressure on the mixture at the end of said path to atmo-

spheric pressure to produce an expanded and gelatinized product having a moisture content of less than 13 percent.

3,940,494

LIQUID RUMINANT FEED SUPPLEMENT

Joseph F. Wilson, Bartlesville, Okla., and Robert S. Parish, Henderson, Colo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 295,828, Oct. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 102,885, Dec. 30, 1970, abandoned. This application July 29, 1974, Ser. No. 492,830

Int. Cl.[2] A23K *1/22*

U.S. Cl. 426—69 3 Claims

1. A composition of matter consisting essentially of urea, ammonium phosphate and water, the weight percentages of the constituents being such as to fall within the polygon of four corners ABC and D drawn in a trilinear diagram defined by the weight percentages of the constituents as follows and as shown in FIG. 1:

	Urea	Ammonium Phosphate Solids	Water
A	28.0	25.4	46.6
B	23.5	21.2	55.3
C	31.0	7	62.0
D	38.3	8.4	53.3.

3,940,495

PROTEIN PRODUCT AND METHOD FOR FORMING SAME

Ronald J. Flier, Ladue, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 600,471, Dec. 9, 1966, abandoned, which is a continuation-in-part of Ser. No. 381,853, July 10, 1964, abandoned. This application Jan. 17, 1973, Ser. No. 324,295

Int. Cl.[2] A23J *3/00*

U.S. Cl. 426—104 52 Claims

1. A method of treating a protein-containing vegetable material having no more than a minor amount of fat and a protein content of at least about that of solvent-extracted soybean meal to form a porous fibrous food product comprising the steps of: moistening the protein-containing vegetable material to a moisture content of at least about 20% by weight and maintaining the pH of the mixture in a range which is slightly above or slightly below the neutral point of the vegetable material; mechanically working the moistened protein-containing vegetable material under temperatures in excess of 212°F. and elevated pressures; forcing the heated, pressurized, mechanically worked material through first restricted orifice means, maintaining the material under elevated temperatures and pressures as it emerges from said first restricted orifice means; the heat, pressure and mechanical working of the material prior to passage through said first restricted orifice means and the heat and pressure applied to said material after passage through said first restricted orifice means being such that upon release of the pressure it has the capability of forming a fibrous structure and then extruding the material through second restricted orifice means into an environment of a pressure substantially lower than said elevated pressures causing expansion of the product with moisture evaporation and the formation of a puffed and fibrous meat-like structure.

3,940,496

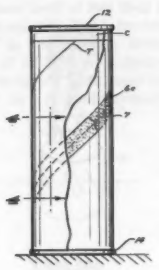
SPIRAL WOUND CAN HAVING DISCRETE LABEL AND REINFORCING ELEMENTS

Charles H. Turpin; Francis R. Reid, and James R. Leezer, all of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Aug. 13, 1973, Ser. No. 387,830

Int. Cl.[2] B65D *85/36, 5/54*

U.S. Cl. 426—123 6 Claims



1. A spirally wound composite cylindrical can adapted to be opened in two stages and having discrete label and reinforcing elements for packaging fresh leavened dough products, said can comprising:

a. a stiffening bodystock sheet of spirally wound configuration,

b. a butt joint between the adjacent side edges of the bodystock sheet, the butt joint extending generally longitudinally and spirally thereof,

c. a liner composed of a flexible sheet material bonded within the bodystock sheet,

d. a tensile element comprising a reinforcing strip removably, adhesively bonded to the outer surface of the bodystock sheet over the butt joint, the adhesive bond between the reinforcing strip and the bodystock sheet being rupturable and serving to hold the adjacent edges of the butt joint in close proximity with one another until the reinforcing strip is removed,

e. a label formed from flexible sheet material removably bonded to the outer surface of the bodystock sheet but unbonded to the adjacent outer surface of the reinforcing strip and portions of the bodystock laterally of the reinforcing strip to define an unbonded center section intermediate the side edges of the label.

f. a circumferentially extending collar cut through the label and reinforcing strip, the collar cut being positioned relatively close to one end of the container,

g. a portion of the edge of the label adjacent to the collar cut being unbonded to the underlying bodystock layer whereby the lifting tab is defined for the label allowing the label to be lifted manually and peeled away from the underlying bodystock material during a first opening stage without removing the reinforcing strip and,

h. lifting tab means operatively associated with the reinforcing strip to thereafter permit the separate removal of the reinforcing strip in a second opening stage from the bodystock to thereby weaken the butt joint by a factor of at least about 20% when the reinforcing strip is removed,

i. whereby the butt joint can then be separated substantially its entire length from one end of the can to the other to provide an opening in the can sufficiently large to withdraw the contents therethrough.

3,940,497

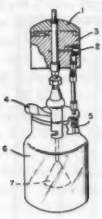
PREVENTING FOOD PRODUCTS FROM ADHERING

Simon Weil Arenson, 6602 Cooper Ridge Drive, Baltimore, Md. 21209

Continuation-in-part of Ser. No. 358,315, May 8, 1973, Pat. No. 3,881,029, which is a continuation-in-part of Ser. No. 299,920, Oct. 24, 1972, abandoned. This application Apr. 28, 1975, Ser. No. 572,509. The portion of the term of this patent subsequent to Apr. 29, 1992, has been disclaimed.

Int. Cl.² A23B *4/00*

U.S. Cl. 426—274 11 Claims



1. A method of preventing the adherence during freezing or during refrigeration of food products selected from the group consisting of meat, poultry and seafood in contact with one another which comprises applying a coating of hardened fat in powder form in an amount effective to prevent adherence during freezing or refrigeration to at least one contacting surface of said food products.

3,940,498

CHILL-PROOFING WITH SYNTHETIC MAGNESIUM SILICATES

Elbert Roy Butterworth, Littleton, and Willard John Duensing, Lakewood, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Sept. 3, 1974, Ser. No. 502,267

Int. Cl.² C12C *7/14;* C12H *1/02, 1/04*

U.S. Cl. 426—423 19 Claims

1. A method of stabilizing aqueous liquids or aqueous liquid suspensions against chill haze formation comprising contacting said liquid or said suspension with an acid-treated synthetic magnesium silicate containing 13% or less by weight of magnesium, on an oxide basis, in an amount effective to eliminate or reduce said chill haze and seperating said silicate from said liquid or liquid suspension to provide an aqueous liquid or aqueous liquid suspension resistant to chill haze formation.

3,940,499

FOOD OR FLAVOR CONTAINING 2,6,6-TRIMETHYL-1-CYCLOHEXEN-1-YLACETALDEHYDE

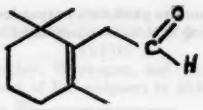
Alan Owen Pittet, Atlantic Highlands; Erich Manfred Klaiber, Neptune; Manfred Hugo Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y., and Joaquin Vinals, Red Bank, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,412

Int. Cl.² A23L *1/226, 1/235*

U.S. Cl. 426—534 3 Claims

1. A process for altering, modifying or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff in an amount of from 0.5 ppm up to about 20 ppm by weight based on the total composition of 2,6,6-trimethyl-1-cyclohexen-1-ylacetaldehyde having the structure:



3,940,500

FLAVORING SEAFOOD WITH S-METHYL METHIONINE SALT

Daniel Richard Sortwell, III, 113 S. Main St., Sherborn, Mass. 01770

Filed Aug. 10, 1973, Ser. No. 387,496

Int. Cl.² A23L *1/226*

U.S. Cl. 426—535 12 Claims

1. The process which comprises adding to a seafood product an effective amount up to about 0.5% by weight of the seafood of a salt of S-methyl methionine to improve the flavor or impart flavor to the seafood product.

3,940,501

FONTINA CHEESE FLAVOR

Wolfram Gustav Freytag, Halstenbek; Karl Heinz Ney, Hamburg, and I. Poetoe Gde Wirotama, Rellingen, all of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed July 12, 1974, Ser. No. 488,124

Claims priority, application Luxemburg, July 17, 1973, 68032

Int. Cl.² A23L *1/226*

U.S. Cl. 426—535 7 Claims

1. A process for imparting or enhancing a fontina cheese flavor to a foodstuff selected from the group consisting of processed cheese, processed cheese preparations, fresh cheese margarine cheese, creamed cheese, cheese fondu, and cheese powder, which comprises:

A. preparing a fontina cheese flavoring composition by admixing

i. from 10 to 100 parts by weight of β-phenylpropionic acid;

ii. from 20 to 300 parts by weight of non-terminal mono-methyl-substituted alkanoic acids having 4 to 6 carbon atoms, said substituted alkanoic acids comprising at least 50 percent by weight of iso-valeric acid;

iii. from 0 to 600 parts by weight of straight chain alkanoic acids having from 2 to 8 carbon atoms, consisting of at least 20 percent by weight of butynic acid;

iv. from 0 to 15 parts by weight of 1-alkanols and 2-alkanols having from 3 to 9 carbon atoms;

v. from 0 to 20 parts by weight of alkanals having from 2 to 5 carbon atoms;

vi. from 0 to 8 parts by weight of 2-alkanones having from 5 to 9 carbon atoms;

vii. from 0 to 4 parts by weight of ethyl esters of straight chain alkanoic acids having from 4 to 8 carbon atoms; and

viii. from 0 to 20 parts by weight of other cheese flavoring ingredients selected from the group consisting of diacetyl, methional and indole; and

B. admixing the mixture obtained by step (A) with said foodstuff in an amount such as to give from 10 to 100 mg/kg of β-phenylpropionic acid and from 20 to 300 mg/kg of the non-terminal mono-substituted alkanoic acids in the flavored foodstuff.

3,940,502

FLAVORING AGENT

Max Winter, Geneva, Switzerland; Irving M. Goldman, Niantic, Conn.; Fritz Gautschi, Commugny, Switzerland; Ivon Flament, Geneva, Switzerland, and Max Stoll, Geneva, Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 24, 1974, Ser. No. 482,691

Int. Cl.² A23L *1/226, 1/234*

U.S. Cl. 426—536 24 Claims

1. As a new composition of matter of soluble coffee material having added thereto a minor, but flavor-modifying amount of a compound selected from the group consisting of furfuryl methyl ether, furfuryl ethyl ether, furfuryl phenyl ether, difurfuryl ether and mixtures thereof.

3,940,503

COLORING PROCESS AND COLORED ARTICLES

Nicolo Bellanca, San Jose, Calif., assignor to Dynapol, Palo Alto, Calif.

Filed Apr. 1, 1974, Ser. No. 456,669

Int. Cl.² A23L *1/275*

U.S. Cl. 426—540 7 Claims

1. A colored edible product comprising a translucent edible substrate having dissolved therein polymeric dye in a weight sufficient to yield a desired shade, said polymeric dye having a molecular weight of from about 2000 to 400,000 and consisting of one part by weight of chromophoric groups represented by Ch joined together by from 0.1 to 2 parts by weight of nonchromophoric linking groups represented by B into a structure represented by a structural formula selected from $+\text{Ch B}+_n$ and

wherein *n* is an integer greater than 1, said weight of polymeric dye being from about 0.4 to 0.9 times the weight of monomeric chromophoric groups Ch necessary to yield said desired shade.

3,940,504

OLEOMARGARINE WITH YELLOW FOOD COLORING

Simon S. Jackel, Westport, Conn., and Mortimer J. Horn, New York, N.Y., assignors to Baker Research Development Service, Inc., New York, N.Y.

Filed July 12, 1974, Ser. No. 488,154

Int. Cl.² A23D *3/00*

U.S. Cl. 426—540 4 Claims

1. An oleomargarine comprising a yellow colorant agent, the improvement wherein the yellow coloring agent comprises oleo resin of turmeric in an amount of from 0.006 to 3% by weight based on the weight of the oleomargarine and sufficient to impart to the margarine a yellow color with a greenish cast and oleo resin of paprika in an amount from 10 to 100% by weight based on the weight of the oleo resin of turmeric and sufficient to eliminate the greenish cast resulting from the use of oleo resin of turmeric alone.

3,940,505

PROCESS FOR DRYING FOODSTUFFS

Bernard H. Nappen, Cranford; Richard M. Boettger, Morristown, and Nicholas G. Marotta, Green Brook, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Sept. 25, 1974, Ser. No. 509,299

Int. Cl.² A23L *1/212*

U.S. Cl. 426—640 7 Claims

1. A method for drying foodstuffs comprising the steps of:
   a. comminuting the uncooked foodstuff,
   b. blending therewith a starch in an amount of 20–96% by anhydrous weight of the total mixture, and
   c. drum drying the mixture of uncooked foodstuff and starch to a moisture level of less than 10%.

6. An extended dried uncooked foodstuff comprising a blend of a foodstuff in comminuted form together with a starch in an amount of 20–96% by anhydrous weight of the total mixture, which blend has been drum dried at a temperature of 290° to 350°F. to a desired moisture level.

3,940,506

SELECTIVE PLASMA ETCHING AND DEPOSITION

Rudolf August Herbert Heinecke, Harlow, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 3, 1974, Ser. No. 466,570

Claims priority, application United Kingdom, May 17, 1973, 23527/73

Int. Cl.² B05D *3/06*

U.S. Cl. 427—38 18 Claims

1. A process for etching an article comprised in part of silicon and in part of a substance selected from a group consisting of silica and silicon nitride, said process comprising the steps of:

etching said article in a plasma containing fluorine, carbon and reducing species; and

adjusting the concentration of reducing species in the plasma to which the article is exposed, whereby the relative etch rates of silicon and the second substance is controlled by adjusting said concentration.

3,940,507

ELECTRON BEAM RECORDING MEDIA AND METHOD OF RECORDING

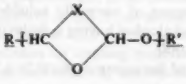
John Fech, Jr., Monmouth Junction, and Eugene Samuel Polinak, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 448,825, May 3, 1974, abandoned. This application Oct. 24, 1974, Ser. No. 517,655

Int. Cl.² G03C *1/68*

U.S. Cl. 427—43 12 Claims

1. A medium for electron beam recording which comprises a film of a polymer having the formula

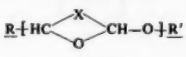


wherein R is H or

and R′ is H or

and X is selected from the group consisting of branched or straight chain alkylene groups of 1 – 10 carbon atoms, saturated or unsaturated cycloalkylene groups and arylene groups of up to 10 carbon atoms and an electrically conductive layer on a support.

11. In the method of recording information whereby a modulated beam of electrons is scanned across the surface of a resist material which becomes more soluble in a developer solvent when impinged upon by a beam of electrons and the resist material is developed with a developer solvent so as to move the solubilized portion thereof, the improvement which comprises employing as the resist material a film of a polymer having the formula



wherein R is H or

and R′ is H or

and X is selected from the group consisting of branched or straight chain alkylene groups of 1 – 10 carbon atoms, saturated or unsaturated cycloalkylene groups and arylene groups of up to 10 carbon atoms and an electrically conductive layer on a support.

3,940,508

PRECOATING COLOR TELEVISION PICTURE TUBE FACEPLATE PANELS TO PROMOTE PHOSPHOR PATTERN ADHERENCE

Harold D. Wilcox, Elmira, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 16, 1974, Ser. No. 506,649
Int. Cl.² B05D 5/06
U.S. Cl. 427—68 **5 Claims**

1. Method of applying an insoluble adherent precoat layer on the faceplate of a color television picture tube over which the phosphor pattern is deposited, which method comprises:

preparing an aqueous slurry containing from about 0.01 to 0.1 weight percent of normally soluble, low molecular weight polyvinyl alcohol having a molecular weight of less than about 50,000;

adjusting the pH of the aqueous slurry to a value of less than about 3;

uniformly dispersing a predetermined amount of the adjusted slurry over the faceplate and drying it thereon to form the insoluble precoat layer.

3,940,509

SEMI-CONDUCTING MATERIALS AND A METHOD FOR THE MANUFACTURE THEREOF

Karl J. Youtsey, Chicago, and William C. Holt, Jr., Prospect Heights, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 19, 1973, Ser. No. 426,280
Int. Cl.² H01L 3/24; B05D 5/12
U.S. Cl. 427—82 **10 Claims**

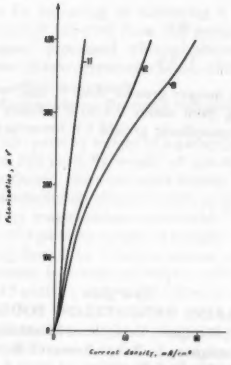
1. A method of manufacturing a semi-conducting pyropolymeric inorganic refractory oxide material which comprises heating a refractory oxide in an oxygen-free atmosphere with a pyrolyzable organic compound at a temperature in the range of from about 400° to about 800°C. for a sufficient time to form a mono-layer of carbonaceous pyropolymer on the surface of said refractory oxide, thereafter further heating the resultant semiconducting pyropolymeric inorganic refractory oxide material in an inert atmosphere at a temperature higher than the firstmentioned temperature and in the range of from about 700° to about 1200°C. for a sufficient time to form a semi-conducting pyropolymeric inorganic refractory oxide material having a temperature coefficient of resistance in a range of from about +20,000 to about −20,000 ppm/°C., and cooling and recovering the last-named material.

3,940,510

PROCESS FOR THE MANUFACTURE OF SILVER-COATED TUNGSTEN CARBIDE ELECTRODE MATERIAL

Karl Höhne, Erlangen, and Konrad Mund, Erlangen-Sieglitzhof, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 6, 1973, Ser. No. 394,772
Claims priority, application Germany, Sept. 12, 1972, 2244701
Int. Cl.² B08B 3/00; C25B 11/00
U.S. Cl. 427—115 **9 Claims**

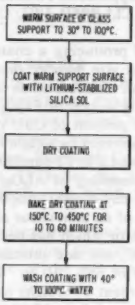


1. A process for preparing silver-coated tungsten carbide particles adapted for use in manufacturing electrodes for fuel cells, which process comprises forming a suspension of finely divided particles of tungsten carbide in an alkaline solution, adding to said suspension a reducing agent capable of reducing silver ions in alkaline medium and also a silver salt soluble in said solution, the amounts of tungsten carbide and silver salt employed being sufficient to provide a silver content of approximately 10 to 20% by weight of said silver-coated tungsten carbide particles, and thereafter separating from said suspension silver-coated tungsten carbide particles.

3,940,511
METHOD FOR PREPARING HAZE-RESISTANT LITHIUM-SILICATE GLARE-REDUCING COATING

Samuel Broughton Deal, Lancaster, and Donald Walter Bartch, Columbia, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed June 25, 1973, Ser. No. 373,601
Int. Cl.² H01J 31/00; B05D 5/02; C03C 17/22
U.S. Cl. 427—165 6 Claims


WARM SURFACE OF GLASS SUPPORT TO 30° TO 100°C.
COAT WARM SUPPORT SURFACE WITH LITHIUM-STABILIZED SILICA SOL
DRY COATING
BAKE DRY COATING AT 150°C. TO 450°C FOR 10 TO 60 MINUTES
WASH COATING WITH 40° TO 100°C. WATER

1. A method for preparing an optical viewing screen having glare-reducing viewing surface consisting essentially of the steps of

a. warming the surface of a glass support to about 30° to 100°C,

b. coating said surface with an aqueous solution contining a lithium-stabilized silica sol,

c. drying said coating,

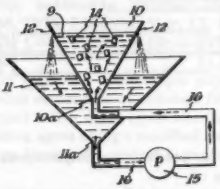
d. baking said dry coating to about 150° to 450°C,

e. and then, subsequent to said baking step (d), washing said dry coating with water having a temperature above about 40°C.

3,940,512
METHOD AND APPARATUS FOR CONCOMITANT PARTICULATE DEPOSITION IN ELECTROLESS PLATING, AND THE PRODUCT THEREOF

Theodore P. Christini, Dushore, Pa.; William P. Flynn, Georgetown, Md.; John B. Inskeep, and Harry J. McCauley, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 103,355, Jan. 25, 1971, Pat. No. 3,853,094. This application May 13, 1974, Ser. No. 469,499
Int. Cl.² B32B 15/04; C23C 3/02
U.S. Cl. 427—180 1 Claim



1. In the electroless plating of preconditioned articles of metal, ceramic, glass, polymer, wood or other material of small enough mass affording buoyant suspension within an electroless plating solution incorporating a soluble salt of a platable metal together with a soluble reductant for said metal, the obtainment of concomitant particle inclusion with the electroless plate of insoluble, inert non-catalytic particles in the size range of about 0.05μ to about 100μ comprising subjecting said articles to buoyant tumbling within a continously circulating expanding jet stream of said electroless plating solution containing a suspension of said particles for a sufficient time to obtain a preselected amount of electroless plating with concomitant deposition of said particles on said articles.

3,940,513
METHOD OF MAKING MOISTURE-RESISTANT POLYURETHANE-BASED PRESSURE-SENSITIVE ADHESIVES

Ralph L. Anderson, Columbia, S.C., assignor to Anchor Continental, Inc., Columbia, S.C.

Filed Feb. 19, 1974, Ser. No. 443,917
Int. Cl.² C09J 7/04
U.S. Cl. 427—207 25 Claims

1. A method of making a moisture-resistant, polyurethane-based, pressure-sensitive adhesive which comprises carrying out the following steps with substantial exclusion of moisture in steps (1) through (5): (1) reacting an aromatic polyisocyanate with polyols of average molecularweight between 1500 and 5000 and hydroxyl number between 30 and 100 containing dissolved, compatible, tackifying resins in amount between 40 and 150 per cent of the combined weight of the polyol of step (1) and the elastomer of the following step (2), in the proportion of from 1.1 to 1.7 equivalents of isocyanate per equivalent of hydroxyl; (2) reacting a liquid hydroxylated elastomer of hydroxyl number between 20 and 60 with an aromatic polyisocyanate in the proportion of between 1.7 and 1.1 equivalents of isocyanate per equivalent of hydroxyl; (3) adding to the product of step (1) an amount of the product of step (2) to make a mixture containing between 6 and 25% of the product of step (2); (4) adding active polyurethane catalyst to the product of step (3) in amount between 0.3 and 5 per cent of the weight of polyurethane polymers therein; (5) coating the product of step (4) upon a stable, flexible, inert backing material in amount to leave a final weight of solids of between 3 and 11 grams per square foot; (6) heating the product of step (5) at a temperature of between 180° and 360°F. for a time sufficient to substantially complete the reaction of isocyanate and leave a dry coating, but not substantially longer.

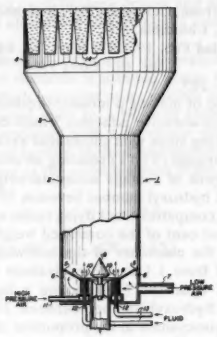
3,940,514
METHOD OF COATING ELECTROSTATOGRAPHIC CARRIER PARTICLES

Donald Arthur Baker, Luton, and Peter Robert Billings, Ruislip Manor, both of England, assignors to Rank Xerox Ltd., London, England

Continuation of Ser. No. 35,801, May 8, 1970, abandoned. This application Dec. 17, 1973, Ser. No. 425,388
Claims priority, application United Kingdom, May 9, 1969, 23804/69
Int. Cl.² B05D 7/00
U.S. Cl. 427—213 8 Claims

1. A method of coating electrostatographic carrier particles comprising introducing an upwardly flowing low pressure gas and a centrally located upwardly flowing high pressure gas at about one-third their full flow rate into a combined fluidized bed and spouted bed coating apparatus, loading said carrier particles into said coating apparatus, increasing the flow rate of said low pressure gas to its full flow rate of about 305 cubic feet per minute at S.T.P. with heating to about 40°C to bring said carrier particles to said temperature, increasing the flow rate of said high pressure gas to its full flow rate of about 16 cubic feet per minute at S.T.P. at about 1.5 atmospheres to form a fluidized bed of said carrier particles, introducing a solution or dispersion of coating material in a carrier liquid into said fluidized bed whereby said carrier particles are contacted with a cloud of atomized liquid droplets of said coating material in a disperse state resulting in a homogeneous distri-

bution of said liquid droplets among said carrier particles, and maintaining said fluidized bed of carrier particles at a temperature and for a time sufficient to volatilize and evaporate said carrier liquid.



3,940,515

DRY PROCESS FOR THE FINISHING OF ORGANIC MATERIAL

Fritz Mayer, Haltingen, Germany; Rudolf Keller, Riehen, and Werner Kunz, Uerikon, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,805

Claims priority, application Switzerland, Apr. 7, 1972, 5135/72

Int. Cl.² C08J *1/44*; D06P *7/00*; B44C *31/00*

U.S. Cl. 427—248 **7 Claims**

1. A dry process for the finishing of organic material, comprising the steps of

a. applying to an inert carrier a preparation containing a film-forming bonding agent which is stable below 250°C and at least one textile finishing agent selected from the group consisting of bacteriostats, fungistats, fungicides, antistatic agents, oil repellants, water repellants, handle-enhancing agents, and fire proofing agents which is transferable at atmospheric pressure above 80°C and below 250°C to the organic material,

b. contacting the treated side of the inert carrier with the surface of the organic material to be finished,

c. heating the inert carrier and the organic material in contact therewith to a temperature of above 80°C and below 250°C until a useful amount of the textile finishing agent has transferred to the organic material, and

d. separating the finished organic material from the inert carrier.

3,940,516

FIREPROOF INORGANIC PROTECTIVE COATING AND THE METHOD OF ITS PRODUCTION

Adam Gierek, Brynow-Katowice; Stanislaw Pawlowski, Gliwice; Boleslaw Formanek, Bytom; Eugeniusz Piesiur, Chorzow; Grzegorz Pucka; Bogdan Blachnicki, both of Katowice; Jerzy Rychlewski, Chorzow, and Janusz Gajda, Katowice, all of Poland, assignors to Politechnika Slaska im Wincentego Pstrowskiego, Gliwice, Poland

Filed Apr. 19, 1974, Ser. No. 462,536

Claims priority, application Poland, May 30, 1973, 162937

Int. Cl.² B05D *3/02*; C09D *5/18*

U.S. Cl. 427—372 **3 Claims**

2. A method of producing a coated substrate comprising grinding to a grain size smaller than 0.5 mm (A) 5 to 15 percent by weight of a silicate oxide sinter or alloy comprising 50 to 65 percent by weight of Fe_2O_3 plus FeO in any weight proportion, 3 to 8 percent of CuO plus CuO_2 in any weight proportion, 2 to 7 percent by weight of CaO, 20 to 30 percent by weight of SiO_2, and 0 to 10 percent of other oxides selected from the group consisting of Al_2O_3, TiO, NiO, CoO, MgO, Na_2O and K_2O in any weight proportion and (B) 15 to 35 percent by weight of an anhydrous aluminosilicate substance in the natural state or which has been sintered at a temperature above 1,000°C, and said substance comprising 40 to 75 percent by weight of SiO_2, 10 to 45 percent by weight of Al_2O_3, 0 to 15 percent by weight of Fe_2O_3 plus FeO in any weight proportion, and 0 to 10 percent by weight of other oxides selected from the group consisting of TiO_2, CaO, MgO, Na_2O and K_2O in any weight proportion; mixing the ground material in a water solution of mono- or dibasic acid phosphates of aluminum, chromium, magnesium, or calcium or a mixture of said acid phosphates, the solution of acid phosphate having a density of 1.3 to 1.6 g/cc, and forming a suspensoid of said ground material in the solution; applying a coating of the suspensoid to the surface of a substrate and hardening the coating in air at a temperature from room temperature up to about 150°C.

3,940,517

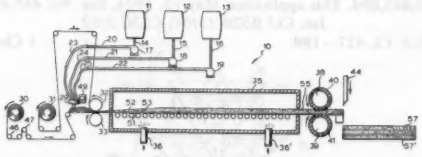
POLYISOCYANURATE FOAM, CATALYST COMPOSITION AND PROCESS FOR PRODUCING SUCH

Alberto DeLeon, St. Petersburg, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 322,841, Jan. 11, 1973, abandoned. This application Apr. 16, 1974, Ser. No. 461,271

Int. Cl.² C08G *18/02*

U.S. Cl. 427—373 **13 Claims**



1. A process for producing a polyisocyanurate foam comprising the steps of:

I. admixing at one point from separate sources:

A. an organic polyisocyanate,

B. a diol having an equivalent weight of 30 to 100,

C. a catalytic composition comprising:

1. an alkali metal carboxylate which is a saturated aliphatic mono-carboxylic acid salt of an alkali metal,

2. polyoxyethylene polyol having a molecular weight between 150 and 450 in the presence of a blowing agent,

II. applying continuously the mixture comprising A, B, and C to a moving substrate, and then,

III. recovering the polyisocyanurate foam adhering to the substrate

wherein the equivalent ratio of A:B is 2:1 to 6:1, wherein the catalytic composition comprises from 0.01 to 5 weight percent of the polyisocyanurate foam.

3,940,518

BAKE TECHNIQUE FOR MANUFACTURING TETRAFLUOROETHYLENE COATED ROLLS

Edward F. Bowler, Jr., Webster; Joseph M. Stupin, Jr., Ontario, and Edward G. Williams, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 26, 1974, Ser. No. 464,384

Int. Cl.² B05D *1/38;* B30B *3/00*

U.S. Cl. 427—379 10 Claims

1. A method for manufacturing a polymer coated roll for use in a xerographic reproducing apparatus comprising:

applying to the surface of the roll a tetrafluoroethylene primer;

drying the primer;

heating the primer-coated roll until the primer is baked;

applying to the surface of said roll a liquid coating consisting essentially of tetrafluoroethylene enamel;

drying said coating;

baking the coated roll at a temperature below the fusion temperature of tetrafluoroethylene resin;

applying at least one more additional liquid coating of tetrafluoroethylene enamel, drying, and baking of said coating after each application at a temperature below the fusion temperature of tetrafluoroethylene resin until the desired thickness of tetrafluoroethylene enamel on the surface is attained; and

heating the coated roll at a temperature sufficient to cause fusion of the tetrafluoroethylene coating.

3,940,519

PROCESS FOR SIZING CELLULOSE FIBRES

Karin Ulla Elisabet Helmer, and Berit Ingegärd Simonsson, both of Solna, Sweden, assignors to Kemanord AB, Stockholm, Sweden

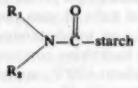
Filed May 15, 1974, Ser. No. 469,977

Claims priority, application Sweden, May 15, 1973, 7306875; May 15, 1973, 7306876; Mar. 13, 1974, 7403374

Int. Cl.² C08B *19/06;* D21D *3/00, 3/20*

U.S. Cl. 427—395 8 Claims

1. A process for preparing hydrophobic paper products by bringing an aqueous suspension of cellulose fibers or a paper product into contact with a sizing agent and thereafter effecting drying, said sizing agent being a modified starch containing hydrophobic group having the general formula



wherein R_1 is an organic, hydrophobic hydrocarbon group having 8 to 40 carbon atoms and R_2 is either a C_1–C_6 alkyl group or has the same meaning as R_1, said modified starch being prepared by reacting starch with a carbamoyl chloride having substituents R_1 and R_2 as defined above.

3,940,520

SULFO-FLUORINATION OF SYNTHETIC RESINS

Dale D. Dixon, Kutztown, and Larry J. Hayes, Trexlertown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 19, 1974, Ser. No. 443,460

Int. Cl.² B05D *3/00*

U.S. Cl. 427—444 5 Claims

1. The process for improving the water transport or wicking properties of a synthetic polymer material which comprises sulfo-fluorinating the polymeric materials in a sealed reaction chamber by reacting said polymeric material with a self-activating gaseous medium comprising about 0.1 to about 20% by volume fluorine, 0.1 to about 50% by volume sulfur dioxide, not more than about 21% by volume oxygen, and the balance comprising inert gases for a time less than one hour and at a temperature for providing from $1 \times 10^{-9} \times 1 \times 10^{-3}$ mg fluorine and sulfur per square centimeter of polymeric material surface.

3,940,521

CHRISTMAS TREE ORNAMENT

Siegfried Hack, Toronto, Canada, assignor to The Raymond Lee Organization, Inc., a part interest

Filed Nov. 5, 1974, Ser. No. 520,988

Int. Cl.² A47G *33/08*

U.S. Cl. 428—7 2 Claims

1. An ornament for Christmas trees, walls or the like which is to be detachably secured to a lamp bulb disposed on the tree, said ornament comprising:

a hollow decorated plastic member having a bulb receiving opening and an inside wall having an enlarged region; said region having a recess;

a horizontal cylinder having a tip at one end, said cylinder being disposed within the member with said tip being pivotally disposed in the recess; and

elongated clamping means secured to the other end of the cylinder within said member adjacent said opening to detachably receive and hold said lamp bulb, said means extending at right angles to said cylinder.

3,940,522

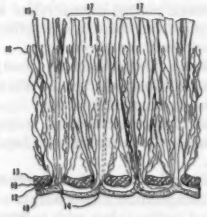
SYNTHETIC FIBERS AND PILE FABRICS MADE THEREFROM

John Humphrey Wessells, Signal Mountain, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 147,627, May 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 46,609, June 16, 1970, abandoned. This application Aug. 2, 1973, Ser. No. 384,952

Int. Cl.² D03D *27/00;* D04H *11/00*

U.S. Cl. 428—17 15 Claims



1. Fabric comprising a backing and a multiplicity of fibers extending from said backing in the form of a cut pile layer and being secured thereto by an adhesive, said multiplicity of fibers comprising:

grass-like fibers comprising a rib and two webs which form a partially folded structure of bi-arcuate cross-section and

having a denier per fiber of about 200 to 1500 and a major dimension of cross-section of at least about 0.02 inch, and

crimped fibers having a denier per fiber of about 6 to 150, with the proviso that:

1. said grass-like fibers and said crimped fibers each comprise at least about 10 weight percent of said multiplicity of fibers, and
2. the denier-per-fiber ratio of the said grass-like fibers to the said crimped fibers is greater than about 3:1.

3,940,523

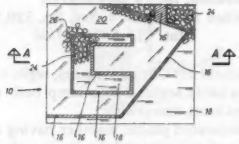
DECORATIVE MULTILAYER OBJECT

Georges Lecoeur, Thiers, and Henri Fontenille, Paris, both of France, assignors to Bercher S.A. Publicite Generale, Geneva, Switzerland

Continuation-in-part of Ser. No. 249,854, May 3, 1972, abandoned, Continuation-in-part of Ser. No. 249,854, May 3, 1972, abandoned. This application May 31, 1974, Ser. No. 475,245

Int. Cl.² B32B *3/18, 31/10, 31/12*

U.S. Cl. 428—38 **15 Claims**



1. A decorative object comprising
   a. a transparent support plate of polymethyl methacrylate, bearing at least on one surface,
   b. at least one decorative layer of polymethyl methacrylate coated on said support and consisting of horizontally separated zones of different colors,
   c. at least two transparent colorless vertical-barrier layer coatings of a cross-linked polymethyl methacrylate based composition, insoluble in monomeric and polymeric methyl methacrylate, the first layer being disposed between said support and said decorative layer and the second layer on the upper surface of said decorative layer, and
   d. horizontal-barrier elements consisting of strips cut from thermoplastic polyester sheets, said elements being fixed to said support plate by said first vertical-barrier layer and separating said horizontally adjacent differently colored zones of said decorative layer.

12. A method for manufacturing a decorative object, comprising the steps of
   a. providing a biplanar transparent support plate of polymethyl methacrylate,
   b. pouring thereon a solvent free liquid composition comprising monomeric methyl methacrylate with polymethyl methacrylate dissolved therein, a polyfunctional ester of methacyrlic acid, and a catlayst,
   c. curing said liquid composition at a temperature in the range of 15° to 40°C during 5 to 24 hours,
   d. placing on the surface of the cured liquid composition strips cut from a thin thermoplastic polyester sheet,
   e. fixing said strips by brushing with said liquid composition, and curing it,
   f. filling the horizontal spatial zones between said strips with a decorative composition comprising a solvent-free monomeric methyl methacrylate with polymethyl methacrylate dissolved therein, a catalyst and, if desired, a dyestuff or pigment,
   g. hardening said decorative composition at a termperature in the range of 15° to 40°C during 5 to 24 hours,
   h. pouring another liquid composition as in step (b) onto said hardened decorative composition, and
   i. curing this composition.

3,940,524

ARTICLE COMPRISING FOAM PLASTIC COVERED WITH AN OUTER SURFACE STRENGTHENING LAYER

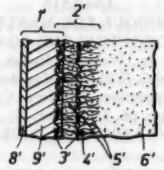
Peter Hoppe, Troisdorf; Gustav Drouven, Bensberg-Moitzberg; Helmut Leyer, Opladen, and Johann Muller, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 250,942, May 8, 1972, abandoned. This application May 28, 1974, Ser. No. 473,958

Claims priority, application Germany, May 14, 1974, 2123975

Int. Cl.² B32B *5/18*

U.S. Cl. 428—86 **10 Claims**



1. In an article such as a structural member and the like having high static and dynamic strength values comprising a core of foamed material having bonded thereto at an outer portion thereof a bonded laminate composed essentially of an outer skin and a reinforcing insert comprising at least one mat-fiber fleece combination in which the mat and fiber fleece are joined so as to constitute a single unit, with the mat disposed adjacent the skin and the fiber fleece disposed adjacent the foamed core and the foamed core penetrating the fiber fleece, the improvement which comprises the material forming the skin penetrating from the skin, partially through the insert to an outer portion of the foamed core, and at least through the outermost mat so that the outermost mat is completely embedded in the material forming the skin.

3,940,525

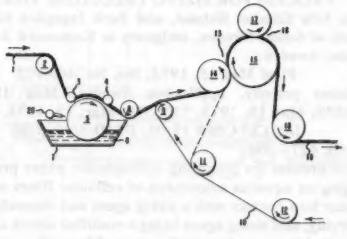
TUFTED CARPET HAVING A POLYOLEFIN FILM AS THE SECONDARY BACKING

Edward Cooper Ballard, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1974, Ser. No. 537,598

Int. Cl.² D03D *27/00;* **D04H** *11/00;* **D05C** *17/00*

U.S. Cl. 428—96 **14 Claims**



1. In a process for backsizing a tufted carpet having a primary textile backing and tufts of yarn protruding therefrom which comprises heating an ethylene/vinyl ester copolymer based hot melt adhesive backsizing composition to a temperature of about 160°F. to about 400°F., applying by a roll-coater a uniform coating of about 10–40 ounces per square yard of the composition in a molten state to the back side of the carpet while moving the carpet past the roll-coater, contacting the still molten adhesive coated back side of the carpet with a secondary backing, pressing the primary and secondary backings together and solidifying the adhesive, the improve-

ment comprising the use of a polymer film, selected from the group consisting of polyethylene, polypropylene and ethylene/vinyl acetate copolymers having a vinyl acetate content of up to about 18% by weight as the secondary backing.

8. In a carpet comprising a primary backing stitched with closely spaced erect loops of yarn to form a tufted structure, an ethylene/vinyl ester copolymer based hot melt adhesive backsizing composition on the back side of said primary backing and a secondary backing adhered by said backsizing composition to said primary backing, the improvement comprising a secondary backing selected from the group consisting of polyethylene film, polypropylene film and ethylene/vinyl acetate copolymer film having a vinyl acetate content of up to about 18% by weight.

3,940,526

BRACED INSULATING ELEMENT AND METHOD FOR ITS MANUFACTURE

Houchang Fathi, Trondheim, Norway, assignor to Sintef, Trondheim, Norway

Filed May 15, 1974, Ser. No. 470,319

Claims priority, application Norway, May 15, 1973, 2006/73

Int. Cl.² B32B *3/12*

U.S. Cl. 428—117 **5 Claims**

1. A braced insulating element, particularly for use as a core material in a wall structure, said element comprising:

a first plurality of parallelly spaced bracing members;

a second plurality of parallelly spaced bracing members;

said first and second pluralities of bracing members extending orthogonally and intersecting each other to form therebetween a plurality of closed quadrangular cells;

each of said cells being filled by a building insulating material having low strength properties;

said bracing members being rigid in directions of the respective planes thereof and individually flexible in directions perpendicular to said respective planes;

said bracing members being continuously bonded to the respective adjacent insulating material;

said element having a pair of major surfaces extending in planes perpendicular to said planes of said bracing members, said major surfaces being formed substantially by said insulating material; and

said element having plural edge surfaces extending perpendicular to said major surfaces, each of said edge surfaces being formed by a bracing member.

3,940,527

FRICTION ARTICLE OF FLUOROELASTOMERS WITH CALCIUM OXIDE BONDED TO METAL

William D. Brandon, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 307,420, Nov. 17, 1972, abandoned. This application Oct. 19, 1973, Ser. No. 408,166

Int. Cl.² B32B *25/04, 25/02*

U.S. Cl. 428—141 **2 Claims**

1. A high shear and impact resistant friction article useful in clutch assemblies and brake assemblies, comprising a metallic back-up member, a roughened and oxidized surface comprising at least a portion of said metallic back-up member, and a fluoroelastomer selected from the group consisting of copolymers of hexafluoropropylene and vinylidene fluoride, and mixtures thereof, with from about 3 to about 15 parts of calcium oxide per hundred parts of fluoroelastomer evenly dispersed therethroughout, said fluoroelastomer being applied to said roughened oxidized surface and simultaneously cured and in the same operation directly bonded without use of a bonding agent other than said fluoroelastomer-calcium oxide dispersion to said roughened and oxidized surface.

3,940,528

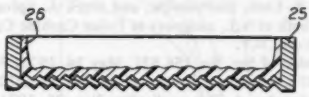
RIGID PLASTICS TILE WITH TEXTURED SURFACE

Arthur H. Roberts, 12 Lynnwood Drive, Westbury, N.Y. 11590

Division of Ser. No. 22,117, March 30, 1971, abandoned, which is a continuation of Ser. No. 526,605, Feb. 10, 1966, abandoned, which is a continuation-in-part of Ser. Nos. 455,764, May 14, 1965, Pat. No. 3,405,026, and Ser. No. 475,989, July 30, 1965, Pat. No. 3,414,456, and Ser. No. 523,778, Jan. 28, 1966, Pat. No. 3,419,455, and Ser. No. 526,667, Feb. 7, 1966, Pat. No. 3,420,729, said Ser. Nos. 455,764, Ser. No. 475,989, Ser. No. 523,778, and Ser. No. 525,667 being a continuation-in-part of Ser. No. 22,002, Apr. 13, 1960, abandoned. This application Dec. 17, 1971, Ser. No. 209,176. The portion of the term of this patent subsequent to Oct. 7, 1985, has been disclaimed.

Int. Cl.² B32B *1/00*

U.S. Cl. 428—161 **17 Claims**



1. A rigid composite impact resistant tile comprising a facing component and a backing component, the facing component being a premolded pliable organic plastic material having a textured front surface and a wall thickness ranging from about 15½ mils to about 250 mils, the backing component being a rigid structural member that is in supporting relationship to the facing component, rigidly maintaining the latter in its premolded shape, said backing component being solidified from a fluid state in intimate adherent contact with the entire rear surface of the facing component, said composite tile having a thickness of from about 1/16 of an inch to about 2 inches, said facing component, when free of the backing component, being itself at least temporarily deformable by hand pressure and being essentially void-free and having been premolded to its final shape and its final and textural characteristics, said premolded textured front surface of the facing component having a texture which embodies in a positive form the texture of its negative mother mold, wherein the completed tile is free of composite sidewalls at its extremities that would have rear surfaces which would define a cavity with the rear surface of the composite front wall of the tile, and wherein the backing component comprises a plastic material which is a member of the class consisting of (a) a rigid polyester composition, (b) a rigid epoxy resin composition, (c) a rigid elastomer composition comprising a filler and an elastomer, wherein there is at least about 200 weight parts of filler for each 100 weight parts of elastomer, (d) a rigid thermosetting plastic foam composition in a thermoset state, and (e) asphalt, said polyester composition comprising the condensation product of a dibasic acid and a diol and also comprising a cross-linking monomer reactant in a crosslinked state.

3,940,529

NON-NESTED TWO-PLY ABSORBENT FIBROUS SHEET MATERIAL

Richard R. Hepford, Folcroft, Pa., and Clifford J. Roberts, Jr., Turnersville, N.J., assignors to Scott Paper Company, Philadelphia, Pa.

Filed July 5, 1973, Ser. No. 376,383

Int. Cl.² B32B *3/00, 3/28*

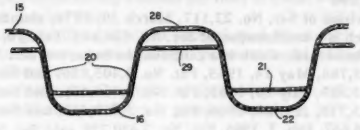
U.S. Cl. 428—178 **10 Claims**

1. A soft, absorbent, fibrous sheet material of papermaking fibers comprising:

two webs joined together with inner surfaces facing each other, each web having a plurality of crests and depressions on its inner surface,

the crests on each web being positioned between the crests on the other web and extending beyond the crests on the

other web toward and spaced from the depressions on the other web, and



the two webs being connected to each other at locations intermediate the crests and depressions on at least one of the webs.

3,940,530

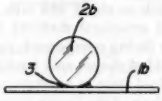
SUPPORT MEDIA WITH SUPPORTED OBJECT

William E. Loeb, Martinsville, and Mark A. Spivack, Wachtung, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 256,531, May 24, 1972, Pat. No. 3,864,202, which is a division of Ser. No. 167,252, July 29, 1971, abandoned. This application Nov. 25, 1974, Ser. No. 527,159

Int. Cl.[2] B32B *3/16, 5/16;* **G01N** *3/56*

U.S. Cl. 428—206 **1 Claim**



1. An article of commerce which is a simulated rain field consisting essentially of an essentially flat film of p-xylylene polymer having a thickness of up to about 25,000 A and wholly supporting one or more discrete objects which are bonded thereto on at least one face thereof, said objects being in the form of encapsulated liquid droplets, the total surface area of said objects facing said film being less than the total surface area of the supporting face of said film, said supported objects being ohmically isolated with respect to non-supported objects; each of said objects having a particle size of up to about 5 millimeters and supported on said film so as to cover up to about 80 per cent of the surface of said field.

3,940,531

STAIN DECORATED GLASS-CERAMIC ARTICLE

Henry M. Demarest, Jr., Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 340,513, March 12, 1973, Pat. No. 3,852,052. This application Sept. 3, 1974, Ser. No. 502,575

Int. Cl.[2] B32B *7/02, 17/00*

U.S. Cl. 428—207 **1 Claim**

1. A stain-decorated glass-ceramic article comprising:
a solid body of fine-grain crystals dispersed in a glassy matrix, the crystals forming the major portion thereof, and including silica, alumina, lithia, and a crystal-nucleating agent, but substantially free of arsenic and antimony oxides;
a tin-penetrated zone extending into said body at least 5 microns from at least one surface of said body and in which the tin ion concentration is greater than that in interior portions of said body;
a colorant-penetrated zone extending into said body from 1 to 40 mils from portions of said at least one surface of said body and in which the concentration of colorant, selected from the group consisting of platinum, palladium, silver, and gold, is greater than in interior portions of said body.

3,940,532

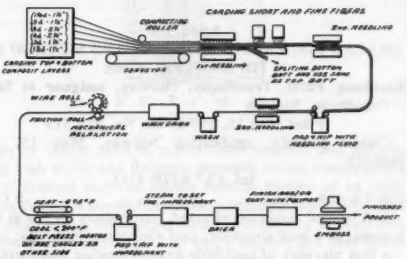
NEEDLED TEXTILE FABRIC WITH A THIN POLYMERIC COATING THEREON

Alexander M. Smith, II, Elkin, N.C., assignor to The Fiberwoven Corporation, Elkin, N.C.

Division of Ser. No. 221,614, Jan. 28, 1972, Pat. No. 3,817,820. This application Apr. 2, 1974, Ser. No. 457,351The portion of the term of this patent subsequent to June 18, 1991, has been disclaimed.

Int. Cl.[2] B32B *5/06, 5/22*

U.S. Cl. 428—218 **37 Claims**



1. An artificial leather comprising
1. a needled textile fabric base of high bulk density and a controlled axis of flexure and being composed of needled textile fibers coherently entangled into an integral structure with a face surface and back surface, said structure having an overall bulk density of at least 6 pounds per cubic foot and a bulk density gradient wherein the bulk density increases from the back surface to the face surface, said needled structure having an axis of flexure which lies within about 0.4 of the distance from the face surface to the back surface; and
2. a polymeric coating disposed on the face surface of the said fabric base and where the thickness of the coating is from 4 to 20 mils.

3,940,533

METHOD OF ATTACHING METAL COMPOUNDS TO POLYMER ARTICLES

Andre Arsac, Millery, France, assignor to Rhone-Poulenc-Textile, France

Filed Apr. 20, 1973, Ser. No. 353,730

Claims priority, application France, Apr. 24, 1972, 72.14762

Int. Cl.[2] D04B *1/00;* **B05D** *5/12*

U.S. Cl. 428—225 **7 Claims**

1. A method for improving the antistatic properties of a fiber selected from the group consisting of polyamide, polyester, polyamide-imide and aromatic polyamide fibers, which comprises treating the fiber with hydrogen sulfide under a pressure slightly over atmospheric or with an aqueous bath of thioacetamide or thiourea and thereafter impregnating the resulting product by immersing it in an aqueous solution containing a water soluble salt of copper, silver, tin, lead or mercury which will react with the said sulfur compound and form an electrically conductive deposit on the said fiber.

3,940,534

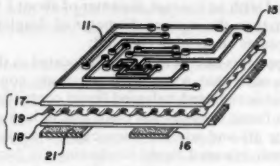
ELECTRICAL LAMINATE

Herbert J. Fick, Northfield, and Edward J. Mahagnoul, Faribault, both of Minn., assignors to G. T. Schjeldahl Company, Northfield, Minn.

Continuation-in-part of Ser. No. 413,695, Nov. 7, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 494,771

Int. Cl.² B32B 17/12

U.S. Cl. 428—228 8 Claims



1. In laminate means for electrically isolating and supporting an electrically conductive metallic layer; the laminate consisting of at least one electrically conductive layer disposed upon a substrate surface, the substrate portion comprising, in combination:

a. woven glass cloth base pad means interposed between a pair of outer substrate layers of polyester mat, said woven glass cloth consisting essentially of glass filamentary fibers with a thickness of between about 1 and 5 mils, and woven together to form a fabric;

b. said polyester mat comprising a mat of spunbonded continuous filamentary polyester fibers with the fibers having a bulk fiber content of between about 85% to 92% of first polyester fibers consisting essentially of oriented polyethylene terephthalate with a certain first melting point, balance of a second thermoplastic polyester fibers consisting essentially of non-oriented polyethylene terephthalate and having a significantly lower melting point than said first polyester fibers, and with said polyester mat having a weight of between about 20 and 30 grams per square yard.

3,940,535

REVERSIBLE MOISTURE-VAPOR-ABSORPTIVE SHEET STRUCTURES AND PROCESS

Rudolf Gaeth, Limburgerhof, and Roland Linke, Weinheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 21, 1973, Ser. No. 418,068

Claims priority, application Germany, Nov. 23, 1972, 2257393

Int. Cl.² D03D 25/00; D04H 13/00

U.S. Cl. 428—260 9 Claims

1. A process for the manufacture of reversibly moisture-vapor-absorptive sheet material which comprises:

a. applying an aqueous solution of a water-soluble vinyl ether polymer to a base material which is gas permeable; whereby said base material is impregnated with said aqueous solution;

b. heating said impregnated base material sufficiently to cause said water soluble vinyl ether polymer to precipitate from said solution whereby said polymer is fixed in said base material;

c. cross-linking said vinyl ether polymer; and

d. drying said sheet material, the amount of water soluble vinyl ether polymer applied to said base in a) being sufficient to produce a final sheet material containing from 10 to 70% by weight of said polymer.

3,940,536

MECHANICALLY REINFORCED HIGH POROSITY PARTIALLY FUSED GLASS FIBER GALVANIC SEPARATOR

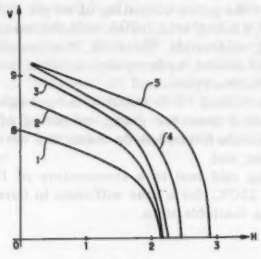
Johann Pitsch, and Pierre Lasserre, both of Nanterre, France, assignors to Compagnie Europeenne d'Accumulateurs, Paris and Societe Fulmen, Clichy, both of, France

Filed July 3, 1973, Ser. No. 376,245

Claims priority, application France, July 3, 1972, 72.24031

Int. Cl.² D04H 1/58

U.S. Cl. 428—288 5 Claims



1. In a separator for a galvanic element comprising glass fibers agglomerated by partial fusion and having a diameter of a few microns, the improvement comprising: a thermal hardened coating on said agglomerated fibers, said coating consisting of grains of thermo-hardened, synthetic material immersed in a natural or synthetic latex; said synthetic material and said natural or synthetic latex being in sufficient amount such that said thermal hardened coating of grains of thermo-hardened synthetic material immersed in said natural or synthetic latex acts to mechanically reinforce the knots in the glass fiber network resulting from partial fusion of the glass fibers without blocking the pores of the partially fused fiber network.

3,940,537

FIBROUS MATS

Joseph P. Burns, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed July 12, 1973, Ser. No. 378,442

Int. Cl.² D04H 1/58; B32B 5/16; D04H 1/60

U.S. Cl. 428—288 8 Claims

1. A styrene insoluble fibrous mat comprising a fibrous material and a binder resin, said resin comprising the single step reaction product of

a. a first alpha-beta ethylenically unsaturated monomer selected from the group consisting of styrene, vinyl esters, vinyl chloride, lower alkyl methacrylates, lower alkyl acrylates, lower alkyl itaconates, lower alkyl maleates, and lower alkyl fumarates;

b. a second alpha-beta ethylenically unsaturated monomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, maleic acid, fumaric acid, maleamic acid, maleamide, furamide, N-monoalkyl/aryl substituted amides, hydroxyethyl acrylate, and hydroxypropyl methacrylate; and

c. a modifier selected from the group consisting of epoxy resins, melamine formaldehyde resins, and urea formaldehyde resins; wherein the amount of binder resin is equal to from about 3 percent to about 8 percent by weight based on the total weight of said mat and said binder resin comprises from about 75% to about 98% by weight of said first monomer, from about 1% to about 10% by weight of said monomer, and from about 1% to about 15% by weight of said modifier.

4. A method of preparing a styrene insoluble fibrous mat, said method comprising

a. preparing a mat comprising a fibrous material and a binder resin, wherein the amount of binder resin is equal to from about 3 percent to about 8 percent by weight based on the total weight of said mat, said resin comprising a mixture of

i. from about 75% to about 98% by weight of a first alpha-beta ethylenically unsaturated monomer selected from the group consisting of styrene, vinyl esters, vinyl chloride, lower alkyl methacrylates, lower alkyl acrylates, lower alkyl itaconates, lower alkyl maleates, and lower alkyl fumarates;

ii. from about 1% to about 10% by weight of a second alpha-beta ethylenically unsaturated monomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, maleic acid, fumaric acid, maleamic acid, maleamide, furamide, N-monoalkyl/aryl substituted amides, hydroxyethyl acrylate, and hydroxypropyl methacrylate; and

iii. from about 1% to about 15% by weight of a modifier selected from the group consisting of epoxy resins, melamide formaldehyde resins, and urea formaldehyde resins; and

b. heating said mat to a temperature of from 150°C. to about 250°C. for a time sufficient to cure said mat to a styrene insoluble state.

3,940,538

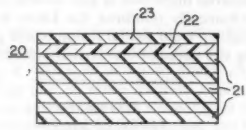
DECORATIVE MELAMINE LAMINATES WITH HIGH YIELD CORE STOCK

Salvatore E. Palazzolo, Hampton, and Harold O. McCaskey, Jr., Allendale, both of S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 1, 1972, Ser. No. 285,697

Int. Cl.[2] B32B *5/14, 5/26, 5/28;* **D21H** *5/14*

U.S. Cl. 428—318 **10 Claims**



1. A high pressure decorative laminate comprising a unitary consolidated combination of (1) a melamine formaldehyde resin impregnated decorative paper layer bonded to (2) a base of a plurality of core sheets impregnated with a phenol formaldehyde resin, at least a portion of the core sheets having an apparent density of about 2.7–3.1 and an air porosity of about 5–15 seconds and having an essentially homogeneous distribution of both hardwood and softwood cellulosic fibers and essentially free of wood slivers containing from about 8 up to 15 percent total lignin based on total weight, at least about 65 percent of said fibers being hardwood fibers, a major portion of said lignin being hardwood lignin, the softwood lignin not exceeding about 2.8 percent of the total weight.

3,940,539

PRESSURE-SENSITIVE RECORDING SHEET

Tsukasa Horinouchi, Chigasaki; Setsuya Egawa, and Masahiro Sakamoto, both of Kanagawa, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed June 6, 1974, Ser. No. 477,122

Claims priority, application Japan, Oct. 31, 1973, 48-121832

Int. Cl.[2] B41M *5/02, 5/12*

U.S. Cl. 428—323 **16 Claims**

1. A smudge-resistant pressure-sensitive sheet recording system having at least one surface and four components for producing a colored mark on application of pressure, comprising:

i. solid polymeric color-developing material located on a surface of the recording system;

ii. colorless, color-forming material reactive with (i) to yield a colored mark;

iii. liquid solvent including (ii) dissolved therein, having only a weak affinity for (i) and contained in a multitude of microcapsules located on a surface of the recording system;

iv. liquid solvent miscible with (iii), having a strong affinity for (i) and contained in a multitude of microcapsules located on a surface of the recording system;

the microcapsules containing (ii) and (iii) having droplets of liquid with an average diameter of about 1 to 3 microns greater than the average diameter of droplets in the microcapsules containing (iv) and;

the components being contiguously located in the recording system such that when a microcapsule containing (ii)) and (iii) is ruptured, released liquid contacting (i) nevertheless forms insignificant color due to lack of affinity of (iii) for (i) and when a microcapsule containing (iv) is ruptured, released liquid contacting (i) forms insignificant color because no (ii) is present and when microcapsules containing (i) and (iii) and microcapsules containing (iv) are ruptured, (ii), (iii), and (iv) combine and, on contact with (i), yield a colored mark.

8. A smudge-resistant pressure-sensitive sheet recording system having at least one surface and four components for producing a colored mark on application of pressure, comprising:

i. solid polymeric color-developing material located on a surface of the recording system;

ii. colorless, color-forming material reactive with (i) to yield a colored mark;

iii. liquid solvent selected from the group consisting of castor oil, esters of trimellitic acid, chlorinated paraffin, esters of phthalic acid, diphenylether, diisopropylnaphthalene and hydrogenated terphenyl, including (ii) dissolved therein, having only a weak affinity for (i) and contained in a multitude of microcapsules located on a surface of the recording system;

iv. liquid solvent selected from the group consisting of diarylmethane, diarylethane, monoisopropylnaphthalene, esters of maleic acid, triaryldimethane and lower-alkyl diphenyl, miscible with (iii), having a strong affinity for (i) and contained in a multitude of microcapsules located on a surface of the recording system;--

the components being contiguously located in the recording system such that when a microcapsule containing (ii) and (iii) is ruptured, released liquid contacting (i) nevertheless forms insignificant color due to lack of affinity of (iii) for (i) and when a microcapsule containing (iv) is ruptured, released liquid contacting (i) forms insignificant color because no (ii) is present and when microcapsules containing (ii) and (iii) and microcapsules containing (iv) are ruptured, (ii), (iii), and (iv) combine and, on contact with (i), yield a colored mark.

3,940,540

NON-SLIP BUILT-UP ROOFING

Robert J. Schmidt, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 4, 1971, Ser. No. 103,846

Int. Cl.[2] B32B *9/00, 11/00;* **C09J** *3/30;* **E04B** *2/00*

U.S. Cl. 428—332 **14 Claims**

1. In a built-up roof using at least two layers of asphalt-precoated felts in layers, the improvement comprised of said layers bound together by at least one binding layer of the residuum of an aqueous latex modified bituminous emulsion, in which (1) the weight ratio of the latex solids to bitumen is in the range of from 1:2.0–30 and (2) said binding layer has a thickness of from about 0.002 to about 0.01 inch.

3,940,541

METHOD FOR THE PRODUCTION OF A DECORATIVE GYPSUM BOARD

Shinsaku Kanatsu, and Akira Takahara, both of Tokyo, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed June 6, 1973, Ser. No. 367,494
Int. Cl.² B32B *31/12*
U.S. Cl. 428—342 5 Claims

1. Decorative gypsum board which comprises gypsum sandwiched between sheets of gypsum board card paper, at least one of said sheets comprising a low-weight basis decorative paper coated with 1–5 g/m² based upon the solid component of a urethane resin and laminated to gypsum board card paper.

3. In the production of decorative gypsum board wherein a hemihydrate gypsum slurry is placed between sheets of gypsum board card paper, at least one of which is decorative, and dried to produce said board, the improvement comprising coating low-weight basis decorative paper with a urethane resin in an amount of 1–5 g/m² based on the solid component, drying the resin-coated paper, laminating the resultant paper to a gypsum board card paper, and utilizing said laminated paper as the decorative card paper upon which the slurry is placed.

3,940,542

POLYURETHANE HYDROGEL FIBERS AND TAPES AND COMPOSITES WITH NATURAL AND OTHER SYNTHETIC FIBERS OR FILMS

Robert John Knopf, St. Albans; Virgil Edison Matthews, and Allen Paul Jones, Jr., both of Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 18, 1974, Ser. No. 480,566
Int. Cl.² B32B *27/08*; C08G *18/14*; B32B *27/40*
U.S. Cl. 428—364 46 Claims

1. An article of manufacture comprising a composite of (I) a tape or fiber of a water swellable, lightly crosslinked, hydrogel polymer of the isocyanato terminated prepolymer comprising the reaction product of:

i. a poly(alkyleneoxy) polyol having an average molecular weight up to about 25,000 wherein the alkyleneoxy group contains from 2 to 4 carbon atoms, and

ii. an organic diisocyanate, said prepolymer lightly crosslinked with an equivalent amount of a crosslinking agent of the group:

iii. water or organic polyamine; wherein said poly(alkyleneoxy) polyol is a mixture of a major amount of a poly(ethyleneoxy) diol having an average molecular weight of from about 4,000 to about 25,000 and a minor amount of a higher polyol of the group poly(alkyleneoxy) triol or poly(alkyleneoxy) tetrol or aliphatic polyhydroxyl compound of the formula $C_nH_{2n+2-m}(OH)_m$ wherein n has a value of 3 to 6 and m has a value of 3 to 4 or mixtures thereof, said triol or tetrol having an average molecular weight of from about 92 to 5,000 wherein the mole ratio of diol to higher polyol in said mixture is from about 6:1 to 40:1; wherein the equivalents ratio of isocyanato groups to hydroxyl groups is from about 1.2:1 to about 1.6:1; wherein the organic polyamine is a primary or secondary diamine or triamine and wherein the equivalents of reactive crosslinking groups in said crosslinking agent used in equivalent to the number of equivalents of isocyanato groups present in said prepolymer; in combination with (II) a natural or a different synthetic fiber or film.

3,940,543

UNITARY SPUN COMPOSITE FILAMENT

Kazuya Chimura; Takashi Kaneko; Shunichi Takashima; Masao Kawashima, and Ryuichi Nakazono, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1973, Ser. No. 388,164
Claims priority, application Japan, Aug. 14, 1972, 47-81306
Int. Cl.² D02G *3/04*
U.S. Cl. 428—373 10 Claims

1. A unitary spun composite filament consisting essentially of (*a*) a block copolymer, as the first component, having a melting point of not lower than 170°C and consisting essentially of 35 to 80% by weight of a polyester, as the hard segment, containing not less than 80% by mole of a tetramethylene terephthalate unit and 20 to 65% by weight of units derived from polytetramethyleneether glycol having a molecular weight of 500 to 5000 and (*b*) a polyester, as the second component, containing not less than 80% by mole of a tetramethylene terephthalate unit, said components (*a*) and (*b*) being present in the filament in a side-by-side relationship and bonded together.

3,940,544

PRODUCTION OF POLYESTER YARN

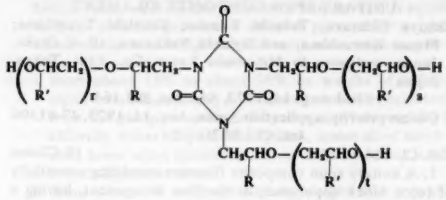
Robert Moore Marshall, Chester, and Kimon Constantine Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,055
Int. Cl.² B29H *9/02*; B32B *25/02*, *27/02*
U.S. Cl. 428—378 3 Claims

1. A synthetic filamentary yarn comprised of polyethylene terephthalate filaments having a carboxyl end group content of less than 25 meq./kg., which are first treated with from about 0.3 to about 0.6 weight percent based on the weight of the yarn of a liquid finish composition consisting essentially of about 10 to about 20 weight percent of said composition of each hexadecyl stearate and refined coconut oil, about 3.0 to about 6.0 weight percent of said composition of ethoxylated tallow amine, about 10 to about 20 weight percent of said composition of ethoxylated lauryl alcohol, about 8.0 to about 12.0 weight percent of said composition of sodium salt of alkylaryl sulfonate, about 1.0 to about 3.0 weight percent of dinonyl-sodium-sulfo-succinate, about 1.0 to about 3.0 weight percent of said composition of 4,4'-thio-bis-(3-methyl-6-tert-butylphenol), about 35 to 50 weight percent of said composition of white mineral oil having a boiling point of between 510° and 620° F. wherein at least about 0.15 to about 0.30 weight percent is retained on said yarn, and then said yarn is treated with 0.5 to 1.5 weight percent based on the weight of the yarn of a finish composition consisting essentially of a polyalkylene glycol compound having the formula

$$R—(O—R_1—O—R_2)_n—OH$$

where R_1 and R_2 are the same or different alkylene units having 1 to 5 carbon atoms, R is an alkyl group containing 1 to 8 carbon atoms, and n has a value to produce a molecular weight of 300 to 600; about 5 to 35 parts per 100 parts by weight of said polyalkylene glycol compound of a triol compound having the formula



wherein R and R′ are independently at each occurrence hydrogen, methyl or ethyl and *r*, *s*, and *t* are integers from 1 to about 20; and 1 to 6 parts per 100 parts by weight of the polyalkylene glycol compound of a polyepoxide compound having at least two epoxy groups, a melting point below 150° C. and a molecular weight below 3,000.

3,940,545

PROCESS FOR BINDING SILICEOUS FIBERS

A. Carey Williams, P.O. Box 16347 Bel Air Station, Mobile, Ala. 36616

Division of Ser. No. 276,314, July 31, 1972, Pat. No. 3,827,900. This application May 23, 1974, Ser. No. 472,830

Int. Cl.² B32B *9/00;* **D02G** *3/00*

U.S. Cl. 428—392 **9 Claims**

1. Process for reducing the static charge and binding siliceous fibers, said process comprising first forming an aqueous composition comprising about 30 to about 70 percent by weight of water, 1 part of at least 1 lower alkanol of 1 to 4 carbon atoms, about 0.8–4 parts of at least 1 polybasic water-soluble acid having 2 or 3 acidic groups per molecule and a molecular weight of less than about 250, about 1–5 parts by weight of a lower alkylene polyol or poly(lower alkylene glycol), and about 0.1–1 parts of at least 1 water-soluble siliconate which reduces the surface tension of pure distilled water by at least 50 percent when used in an amount of 0.4 weight percent therein, wherein said lower alkanol and said lower alkylene polyol or poly(lower alkylene glycol) are mixed together prior to the addition thereto of said polybasic acid, applying the resulting composition to siliceous fibers at a temperature from about 35° to about 100°F in an amount corresponding to at least 1 oz. of said composition per 30 lbs. of siliceous fibers, and then drying said fibers to form a dried coating of said composition thereon.

3,940,546

CHLORINATED SILICEOUS MATERALS AS FILLERS AND REACTANTS

Jean Mercier, Kessel-Lo; Marc Della Faille, La Neuve Cour, and Claude Bleiman, Kessel-Lo, all of Belgium, assignors to Gerdec, Paris, France

Division of Ser. No. 270,625, July 11, 1972, Pat. No. 3,839,062. This application Mar. 11, 1974, Ser. No. 449,683

Claims priority, application France, July 13, 1971, 71.25714

Int. Cl.² B05D *5/00;* **B32B** *9/04*

U.S. Cl. 428—446 **15 Claims**

1. A process which comprises reacting a chlorinated mineral with at least one polymerizable monomer in the presence of a free radical initiator, said chlorinated mineral having a siliceous framework of a phyllosilicate in which 5–80% by weight of the octahedral layers are removed and chlorine atoms linked to the said framework through Si—Cl bonds.

3,940,547

ADHESIVE POLYOLEFIN COMPOSITION

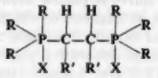
Donald G. Needham, and Ray D. Griffin, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1973, Ser. No. 412,282

Int. Cl.² B32B *15/08, 27/06, 27/30*

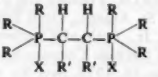
U.S. Cl. 428—463 **28 Claims**

1. A laminate comprising a first layer of a first material selected from the group consisting of suitable metals, elastomers, resins, and combinations thereof and a second layer bonded to said first layer, said second layer being formed of a composition comprising a polyolefin, an acetylenic diperoxy crosslinking agent, a halogenated phosphorus-nitrogen compound represented by the formula



where R′ is selected from the group consisting of hydrogen and alkyl radicals having 1 to 3 carbon atoms, R is a cyano alkyl radical having 2 to 6 carbon atoms, and X is chlorine, bromine, or iodine; ammonium polyphosphate having at least 45 percent of phosphate in the form of polyphosphates; and dimer of hexachlorocyclopentadiene; said first material being a material to which said composition of said second layer will adhere.

10. The process of bonding a suitable first surface to a suitable second surface, said process comprising combining a polyolefin, an acetylenic diperoxy crosslinking agent, ammonium polyphosphate having at least 45 percent of phosphate in the form of polyphosphates, dimer of hexachlorocyclopentadiene, and a halogenated phosphorus-nitrogen compound represented by the formula



where R′ is selected from the group consisting of hydrogen and alkyl radicals having 1 to 3 carbon atoms, R is a cyano alkyl radical having 2 to 6 carbon atoms, and X is chlorine, bromine, or iodine; depositing the thus-prepared polyolefin composition between said suitable first surface to which it is capable of adhering and said suitable second surface to which it is capable of adhering; heating said polyolefin composition, said first surface, and said second surface to a temperature above the melting point of said polyolefin composition; maintaining said polyolefin composition, said first surface, and said second surface at said temperature for a period of time sufficient to permit a crosslinking reaction to take place; and cooling said polyolefin, said first surface, and said second surface.

3,940,548

SURFACE TREATMENT OF RUBBER ARTICLES WITH AN ALKYL HYPOHALITE

Yoshihiro Todani, Kamakura, and Toshio Ohkawa, Yokohama, both of Japan, assignors to Nippon Zlin Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 290,409, Sept. 19, 1972, abandoned. This application Feb. 26, 1974, Ser. No. 445,894

Int. Cl.² B32B *25/04, 25/12*

U.S. Cl. 428—492 **14 Claims**

1. A process for treating the surfaces of shaped articles of rubber, which comprises contacting the surfaces of shaped articles of rubber containing carbon-to-carbon unsaturated double bonds, with an alkyl hypohalite selected from one of

the group consisting of C_{1-5} alkyl hypohalites and halo- C_{1-5} alkyl hypohalites.

3,940,549

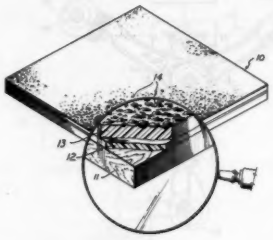
FIRE-RESISTANT RESIN

Howard A. Whittum, Worcester, and Michael J. Hjelm, Ashby, both of Mass., assignors to Advance Coatings Co., Westminster, Mass.

Filed Mar. 30, 1973, Ser. No. 346,354

Int. Cl.² B32B 27/30

U.S. Cl. 428—500 **13 Claims**



1. A fire-resistant product comprising a flammable substrate and a layer of fire-retardant material bonded to the surface of the substrate, said material resulting from polymerization of a mixture comprising from 4–50 wt.% of a first monomer chosen from the group consisting of hydroxy ethylacrylate, hydroxy propylacrylate, hydroxy butylacrylate, ethylene glycol monoethyl ether acrylate and diacetone acrylamide, from 0–50 wt.% of an alkyl methacrylate monomer, and from 30–70 wt.% of a chlorinated paraffin containing from 40–75 wt.% chlorine and including a heat intumescents substance.

3,940,550

ULTRAFINE NATURAL CALCIUM CARBONATES AS COATING PIGMENTS IN COATED PAPERS

Pierre Delfosse, Paris, France, and Alfred Bosshard, Oftringen, Switzerland, assignors to Pluss-Staufer AG, Switzerland

Filed Oct. 15, 1973, Ser. No. 406,430

Claims priority, application Germany, Oct. 18, 1972, 2251099

Int. Cl.² B32B 23/08, 27/10

U.S. Cl. 428—511 **13 Claims**

1. Paper coated with a composition comprising an ultrafine natural calcium carbonate as a pigment, said pigment having an average statistical particle diameter of from 0.5 to 0.7 μm, a maximum diameter of from 3.0 to 4.0 μm, and a specific surface area of at least 12 sq.m./g.

3,940,551

APPARATUS AND METHOD FOR THE MELT REDUCTION OF IRON OXIDES

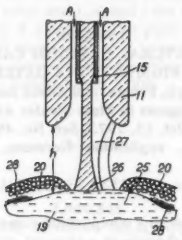
Bernt Ling, and Bjorn Widell, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 28, 1974, Ser. No. 455,949

Claims priority, application Sweden, Mar. 30, 1973, 7304515

Int. Cl.[2] H05B 7/20

U.S. Cl. 13—9 R 7 Claims



1. An apparatus for the melt reduction of iron oxide material and comprising a hearth having an electrically conductive lower portion, a tubular electrode extending downwardly towards said hearth and having a lower end, means conducting direct current to said conductive portion and to said electrode with the latter forming a cathode and causing the formation of a melt meniscus extending above the level of a melt in said hearth and positioned beneath the lower end of said electrode, and means for feeding iron oxide material in particle form through said electrode and its said lower end so as to fall on said meniscus.

3,940,552

WATER-COOLED PANEL FOR ARC FURNACE

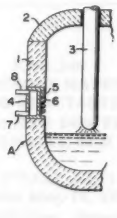
Susumu Mizuno, Nagoya, Japan, assignor to Daido Seiko Kabushiki Kaisha, Japan

Filed Jan. 17, 1975, Ser. No. 541,925

Claims priority, application Japan, Jan. 23, 1974, 49-10713[U]

Int. Cl.[2] F27D 1/04

U.S. Cl. 13—35 2 Claims



1. A water-cooled panel of an arc furnace so as to form a portion of the furnace wall, characterized in that the panel has an outer surface exposed to the inside of the arc furnace, said exposed surface being provided with a plurality of fins, said fins being welded to said exposed surface and being upwardly inclined and arranged in grid or checkerboard pattern.

3,940,553

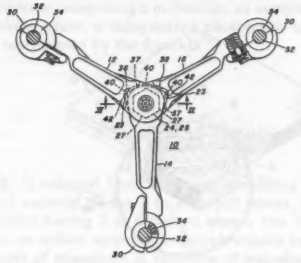
FRAMELESS SPACER WITH VISCOELASTIC DAMPING MEANS

Ronald G. Hawkins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 24, 1975, Ser. No. 552,181

Int. Cl.[2] H02G 7/14, 7/12

U.S. Cl. 174—42 8 Claims



1. A lightweight, inexpensive frameless damper spacer for parallel, overhead conductors comprising at least two, rigid, spacer arms, rigid pin means pivotally connecting the arms together adjacent a central location of the spacer, means at the end of each arm remote from said central location for clamping each of the arms to a respective overhead conductor, opposed recesses provided respectively in the arms adjacent said central location, a relatively thick, resilient viscoelastic disc located and secured between said arms and in said recesses, the opposed recesses and disc having matching configurations that function to hold the viscoelastic disc against relative rotation with respect to the arms when relative rotation of the arms occurs about said rigid pin means.

3,940,554

AUTOMATIC FREQUENCY CONTROL DEVICE FOR TELEVISION RECEIVER

Mitsuya Masuda, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Aug. 2, 1974, Ser. No. 494,091

Claims priority, application Japan, Aug. 16, 1973, 48-92192; Oct. 17, 1973, 48-117227

Int. Cl.[2] H04N 5/50

U.S. Cl. 178—5.8 AF 6 Claims

1. An automatic frequency control device for a television receiver comprising

a. a mixer for mixing a received TV signal with the output of a local oscillator,

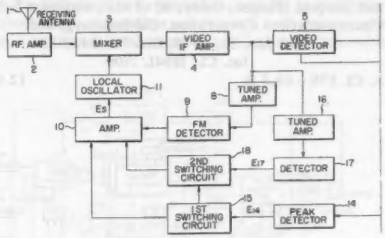
b. said local oscillator coupling its output of a predetermined oscillation frequency to said mixer,

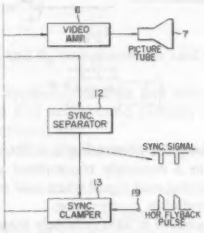
c. a video intermediate frequency amplifier for amplifying the output of said mixer,

d. an FM detector for detecting the output of said video intermediate frequency amplifier, the S-shaped output voltage of said FM detector being coupled to said local oscillator so as to automatically correct the oscillation frequency thereof,

e. means connected to said video intermediate amplifier and bypassing said FM detector for detecting the signal with a frequency equal to the video intermediate frequency minus the difference between said video intermediate frequency and the sound intermediate frequency of the adjacent receiving channel, and

f. means for correcting said S-shaped output voltage in response to the output of said detecting means so as to





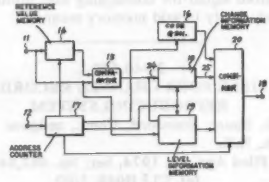
prevent the pull-in of the sound carrier of the adjacent receiving channel.

3,940,555

PICTURE SIGNAL TRANSMISSION SYSTEM

Kitsutaro Amano, Yokohama; Hiroshi Sasaki, Nagareyama, and Tatsuo Maruyama, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Aug. 21, 1973, Ser. No. 390,187
Claims priority, application Japan, Aug. 23, 1972, 47-83630
Int. Cl.² H04N *5/38*
U.S. Cl. 178—6 **7 Claims**



1. In a picture signal transmission system having a transmission medium for transmitting therethrough after coding a picture signal obtained by scanning at least one picture to be transmitted, and

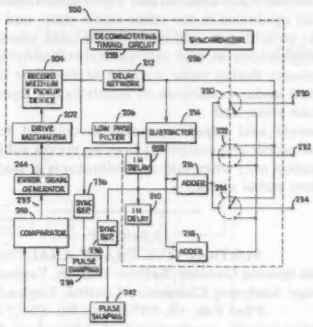
detection means provided for detecting a difference between a representative level value of each picture element unit formed by one picture element and a forecast value, obtained in accordance with a predetermined rule and based on a representative level value of adjacent ones of said picture element units; the improvement comprising: transmission means connected to the detection means and said transmission medium for transmitting first level information and second level information to said transmission medium, said first level information indicating for each picture element by a bit of binary information, whether or not the said difference exceeds a predetermined threshold value for a group of picture elements corrresponding to a predetermined area of the picture, said second level information indicating level information of particular picture elements on each side of which said difference exceeds the threshold value.

3,940,556

TIMING ERROR DETECTING AND SPEED CONTROL SYSTEM

Charles D. Boltz, Jr., Greenwood, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 284,511, Aug. 29, 1972. This application June 12, 1974, Ser. No. 478,653
Int. Cl.² H04N *5/76*; G11B *17/00*; H02K *7/10*
U.S. Cl. 178—6.6 R **2 Claims**



1. In a video playback system wherein a prerecorded composite video signal is recovered from a record medium by a pickup device when relative motion is established between said record medium and said pickup device, a timing error detecting and speed control system comprising:

drive means for establishing a relative motion between said record medium and said pickup device;

means coupled to said drive means and responsive to an error signal for adjusting said drive means to control the speed of said relative motion;

signal processing circuits coupled to said pickup device including means for deriving signal information from said composite video signal which nominally recurs at the desired horizontal line scanning rate of said composite video signal;

means coupled to said deriving means for delaying said signal information for a period of time corresponding to one horizontal period at the desired horizontal line scanning rate;

error signal generating means coupled to said delay means for developing an error signal by comparison of said delayed and undelayed signal information, said error signal being representative of the deviation of said signal information recurrence rate from said desired horizontal line scanning rate; and

means for applying said error signal to said adjusting means such that said adjusting means adjusts said drive means to cause the speed of said relative motion to change in a direction tending to reduce the deviation of said signal information recurrence rate from said desired horizontal line scanning rate;

wherein said error signal generating means comprises a bistable multivibrator, having a pair of input terminals and an output terminal, and subject to operation in either of two stable states;

wherein said error signal generating means also includes first pulse generating means coupled to said recurring signal information deriving means and responsive to said undelayed signal information for developing a trigger

pulse in response to each appearance of said recurring signal information at the output of said deriving means, and second pulse generating means coupled to said delaying means and responsive to said delayed signal information for developing a trigger pulse in response to each appearance of said recurring signal information at the output of said delaying means;

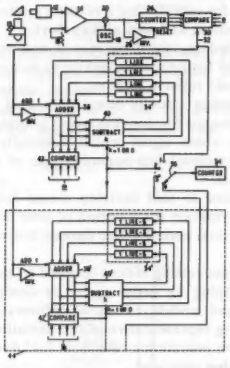
wherein said error signal generating means further includes means for applying the trigger pulse output of said first pulse generating means to a first of said pair of multivibrator input terminals, and means for applying the trigger pulse output of said second pulse generating means to a second of said pair of multivibrator input terminals; said multivibrator being subject to switching to one stable state when trigger pulse appearance at said first multivibrator input terminal occurs during pulse absence at said second input terminal and under conditions of multivibrator operation in the other stable state, and being subject to switching to said other stable state when trigger pulse appearance at said second multivibrator input terminal occurs during pulse absence at said first input terminal and under conditions of multivibrator operation in said one state; and

wherein said adjusting means is coupled to said output terminal, and comprises braking means subject to energization only when said multivibrator is in said other of said two stable states.

3,940,557
SUBTRACTIVE IMAGE ANALYSIS

Gerald Marvin Gardner, Saffron Walden, England, assignor to Image Analysing Computers Limited, England

Filed Feb. 18, 1975, Ser. No. 550,737
Claims priority, application United Kingdom, Feb. 20, 1974, 7995/74; Feb. 22, 1974, 8346/74
Int. Cl.² H04N 1/18
U.S. Cl. 178—6.8 **24 Claims**



1. A method of analysing a feature in a field comprising:

converting the video signal amplitude excursions to constant amplitude pulses by threshold detection;

releasing a series of timing pulses for the duration of each constant amplitude pulse and counting each series of timing pulses so released;

resetting the counting circuit in the absence of a timing pulse during a timing interval;

generating an overflow signal when the counter reaches a value *n*;

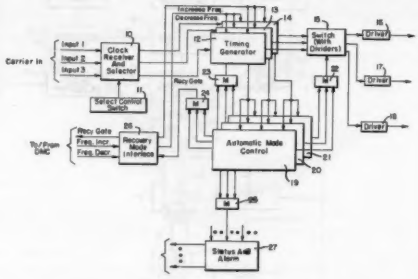
releasing timing pulses for the duration of each overflow signal so generated; and

analysing the timing pulses so released.

3,940,558
REMOTE MASTER/SLAVE STATION CLOCK

Ova Gene Gabbard, Germantown; Pradeep Kaul, Rockville, and Joaquin Hangen, Olney, all of Md., assignors to Digital Communications Corporation, Gaithersburg, Md.

Filed Jan. 31, 1975, Ser. No. 546,052
Int. Cl.² H04L 7/00
U.S. Cl. 178—69.5 R **12 Claims**



1. A phase lock loop for generating a stable reconditioned signal in response to a remotely transmitted signal and for independently producing said signal when said remotely transmitted signal is unavailable, comprising;

an input port responsive to said remotely transmitted signal and having serially connected thereto,

a phase detector,

a low pass filter,

an analog to digital convertor,

a multiplexer,

a digital to analog convertor, and to a voltage controlled oscillator, said voltage controlled oscillator providing a second input to said phase detector,

memory means, including filter means, serially connected between said analog to digital convertor and said multiplexer for storing a filtered digital representation of the output of said analog to digital convertor,

means for detecting unavailability of said remotely transmitted signal, and

switch means responsive to detected failure of said remotely transmitted signal for controlling said multiplexer to be responsive only to said memory means.

3,940,559
COMPATIBLE FOUR CHANNEL RECORDING AND REPRODUCING SYSTEM

Benjamin B. Bauer, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Apr. 18, 1974, Ser. No. 462,042
Int. Cl.² H04R 5/00
U.S. Cl. 179—1 GQ **6 Claims**

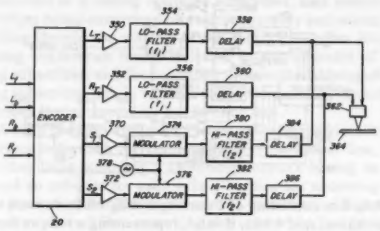
1. A compatible four channel sound system for use in conjunction with a recording system for recording four individual audio signals designated L_f, L_b, R_b and R_f on a recording medium having first and second primary information channels and a subsidiary information channel, said first and second primary information channels carrying information that is consistent and compatible with existing monophonic and stereophonic standards, comprising:

a. means for forming a first composite signal designated L_T which contains, to the extent they are present, L_f in a dominant proportion and L_b and R_b in sub-dominant proportions, L_b and R_b being phase shifted with respect to each other;

b. means for forming a second composite signal designated R_T which contains, to the extent they are present, R_f in a dominant proportion and L_b and R_b in sub-dominant

proportions, L_b and R_b being phase shifted with respect to each other;

c. means for forming an auxiliary signal which consists of only the individual audio signals L_b and R_b, in equal proportion, to the extent they are present, both components of said auxiliary signal being in a 45° phase relationship



with the L_b and R_b components in said composite signals, L_T and R_T;

d. means for applying said first and second composite signals to said first and second primary information channels, respectively; and

e. means for applying said auxiliary signal to said subsidiary channel.

3,940,560

QUADRIPHONIC SOUND PICK-UP AND REPRODUCTION DEVICES

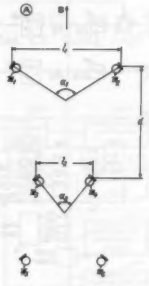
Roland J. Condamines, Chatillon-sous-Bagneux, France, assignor to Etablissement Public, Telediffusion de France, Paris, France

Filed Jan. 31, 1975, Ser. No. 545,831

Claims priority, application France, Jan. 31, 1974, 74.03269

Int. Cl.² H04R 5/00

U.S. Cl. 179—1 GQ **3 Claims**



1. A sound pick-up device for multiphonic broadcasting and recording, comprising a first stereophonic pair of directional microphones disposed at a first given distance from a sonic scene to be transmitted and having a second stereophonic pair of directional microphones disposed at a second given distance from said sonic scene, said second distance being greater than said first distance by a quantity *d*, each microphone having a sound pick-up axes, the four microphones being disposed so that the spacing *l*2 between the microphones of the second pair is substantially less than the spacing *l*1 between the microphones of the first pair, and the angle of divergence α_2 of the sound pick-up axes of the second pair of microphones in the direction of the sonic scene is substantially less than the angle of divergance α_2 of the sound pick-up axes of the first pair of microphones; said device being characterized in that each of said pairs of microphones is arranged symmetrically with respect to a median vertical plane of said sonic scene.

3,940,561

SIMPLEX INTERCOMMUNICATION SYSTEM AND A TWO-WAY INTERCOMMUNICATION SYSTEM HAVING AN ELECTRONIC TRUNKING SCHEME

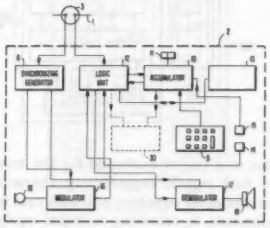
Günter Heinze, Aug.-Hecht-Str. 19, 605 Offenbach am Main; Willi Müller, Fuchstanzstr. 48, 6 Frankfurt am Main; Hans Ulrich von Zimmerman, Mengeder Str. 18a, 4355 Woltrop, and Karl-Heinz Schalomon, Gertrudenstr. 43, 4354 Datteln, all of Germany

Filed Oct. 30, 1973, Ser. No. 411,097

Claims priority, application Germany, Oct. 30, 1972, 2253101

Int. Cl.² H04J 3/02

U.S. Cl. 179—15 AL **2 Claims**

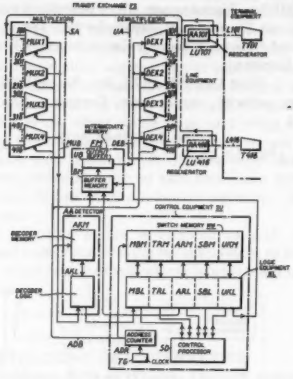


1. A simplex or two-way intercommunciation system for a large number of subscriber stations, for example, permitting the connection of about 10 to 1000 subscribers, and having an electronic trunking scheme or system of establishing the connections, characterized in that both the transmission of signals and the establishment of connections is effected by the time-division multiplex process, in that all of the subscriber stations are connected to a wiring system for directed information transmission, said wiring system comprising a central synchronizing generator which supplies synchronizing signals for the time division multiplex operation, and in that the signal transmission to the wiring system is digital, the conversion of the analog speech signal into digital signal form and the recovery of the speech signal taking place in the subscriber stations, the conversion of the speech signals into digital signal form being effected according to the delta modulation process, and each subscriber being able only to respond via a time channel fixedly connected thereto, and a local synchronizing generator is provided in each subscriber station, said local synchronizing generator consisting essentially of a phase arrested loop, a meter, the counting capacity of which depends on the maximum number of subscribers and the requisite synchronizing impulses, and at least two digital comparators, the local synchronizing generator being synchronized by the central synchronizing generator and the particular time channel which is fixedly connected to the subscriber stations and the freely selectable time channels of the subscriber stations called being adapted to be determined by the meter and the comparator, and wherein the local synchronizing generator is designed to be used simultaneously for producing the interrogation impulses for the modulation and demodulation stages.

3,940,562
TRANSIT EXCHANGE FOR TIME DIVISION MULTIPLEX ASYNCHRONOUS DATA

Per-Olof Thyselius, Tyreso, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed July 24, 1974, Ser. No. 491,274
Claims priority, application Sweden, Aug. 10, 1973, 7310969
Int. Cl.² H04J 3/00
U.S. Cl. 179—15 BA **7 Claims**



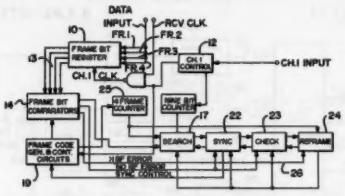
1. Apparatus in a transit exchange for the transmission of asynchronous data signals representing character elements having a given character structure and data rate from sending terminal equipments to receiving terminal equipments with the aid of a control equipment, including a computer, at least one sampling device common to a number of sending terminal equipments and arranged for working with the time division multiplex principle for sampling with the aid of sampling pulses a number of incoming lines for the instantaneous values of received data signals, and a detector means operating synchronously with said sampling device, said detector means including a decoder logic, operating in a time division mode, successively processing the sampling pulses to establish the binary value of each character element and, in correspondence with said binary value, to produce a binary indication signal, the improvement comprising an intermediate memory connected to said decoder logic for successive storage of indication values represented by the indication signal in an addressed location associated with the receiving terminal equipment, a read-out device including means for transferring cyclically from the intermediate memory the indication values, and a regeneration means associated with the receiving terminal equipment receiving said indication values for forming therefrom data signals which switch value in synchronism with the indication signals.

3,940,563
REFRAMING METHOD FOR A CARRIER SYSTEM HAVING A SERIAL DIGITAL DATA BIT STREAM

Dieter A. Susset, San Mateo, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Oct. 23, 1974, Ser. No. 517,229
Int. Cl.² H04J 3/06
U.S. Cl. 179—15 BS **3 Claims**

1. In a reframing method for a carrier system having a serial digital data bit stream having frames and multiframes which consist of a predetermined number of frames each frame having an additional frame bit used as a terminal frame code which is an alternating pattern of 1 and 0 bits every other frame and used as a signalling frame code for signalling frame detection which is a pattern of three 0 bits followed by three 1 bits every other frame said frame bit codes repeating themselves every multiframe said carrier system including a frame code generator for generating said frame bit codes said method comprising the following steps: storing a plurality of corresponding bits from each of at least four consecutive frames; searching for a valid terminal frame code in a group

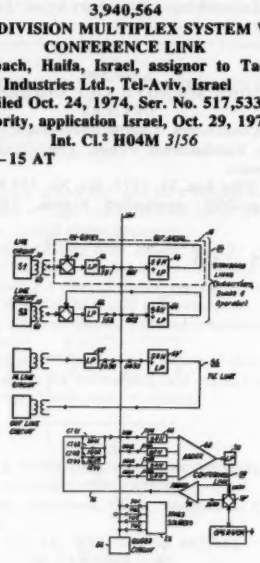


of four bits consisting of 1 corresponding bit from each of said four frame, said 4 bits, if valid, representing a unique frame of said multiframe; comparing said group of 4 bits in which a valid terminal frame code was found to 4 consecutive bits generated by said frame code generator; and synchronizing said generator to generate said multiframe code corresponding to said 4 valid bits.

3,940,564
TIME DIVISION MULTIPLEX SYSTEM WITH CONFERENCE LINK

Shelomo Orbach, Haifa, Israel, assignor to Tadiran Israel Electronics Industries Ltd., Tel-Aviv, Israel

Filed Oct. 24, 1974, Ser. No. 517,533
Claims priority, application Israel, Oct. 29, 1973, 43516
Int. Cl.² H04M 3/56
U.S. Cl. 179—15 AT **7 Claims**



1. A time division multiplex system including a plurality of subscriber links each for connection to a subscriber line, the subscriber links including a switching network having an in-gate and an out-gate for each subscriber line for accessing it to a common transmission highway, and a common control for controlling the in-gates to sequentially connect a calling subscriber link to the common transmission highway in time-slots allotted to the called subscriber links and for controlling the out-gates to connect a called subscriber link to the common transmission highway in the time-slot of the calling subscriber, the improvement wherein the system further includes a conference link to the common transmission highway, the conference link including a plurality of incoming conference lines and a plurality of outgoing conference lines for effecting at least one conference connection between a plurality of the subscriber lines, a switching network including an in-gate in

each incoming conference line and an out-gate in each outgoing conference line for accessing the lines to the common transmission highway, the common control including means for controlling the conference in-gates for sequentially connecting the incoming conference lines to the common transmission highway in specific time-slots allotted to them, and controlling the conference out-gates to connect a called outgoing conference line to the common transmission highway in the time-slot of a calling conferee subscriber, said means for controlling being comprised of a cyclic memory and means for recording therein the address of the called subscriber link or outgoing conference line in relation to the time-slot of the calling subscriber, and for recording therein the address of the calling subscriber link in relation to the time-slot of the called subscriber line or incoming conference line.

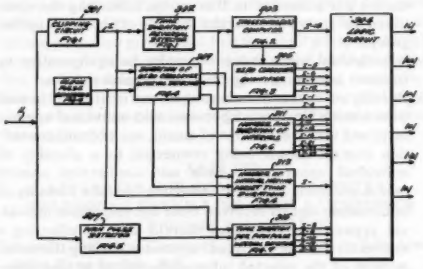
7. A time division multiplex system including a plurality of subscriber links each for connection to a subscriber line, the subscriber links including a switching network having an in-gate and an out-gate for each subscriber line for accessing the respective subscriber line to a common transmission highway, a common control for controlling the subscriber line in-gates to sequentially connect the calling subscriber links to the common transmission highway in time-slots allotted to the subscriber links, and for controlling the out-gates to connect a called subscriber link to the common transmission highway in the time-slot of the calling subscriber; an operator line; an operator in-gate for providing access of the operator line to the common transmission highway; a tone source; and a tone source in-gate for providing access of the tone source to the common transmission highway; said in-gates being maintained at different DC voltage levels, the DC voltage level of the subscriber links being at one extreme value, that of the operator line being at the other extreme value and that of the tone source being between the two extreme values whereby in the event of simultaneous opening of a plurality of said in-gates the voltage level of the operator line is effective to override the other lines, and that of the tone source is effective to override a subscriber link.

3,940,565

TIME DOMAIN SPEECH RECOGNITION SYSTEM

Klaus Wilhelm Lindenberg, 929 Osceola Ave., Winter Park, Fla. 32789

Filed July 27, 1973, Ser. No. 383,293
Int. Cl.[2] G10L 1/00
U.S. Cl. 179—1 SA 7 Claims



1. A speech recognition system comprising means for detecting the pitch pulse period of an input speech signal,

means for clipping said input speech signal to obtain the zero crossover pattern thereof,

means responsive to said pitch pulse period detecting means for quantizing the zero crossover pattern of said clipped input speech signal, and

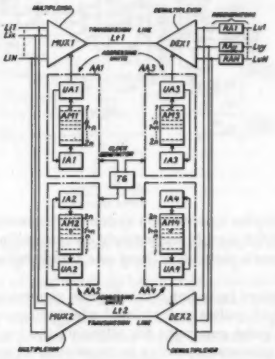
means for classifying the quantized zero crossover pattern in accordance with the pattern of one of a plurality of phonemes.

3,940,566

ARRANGEMENT FOR PREVENTING INTERRUPTIONS IN A TIME DIVISION MULTIPLEX TRANSMISSION LINK FOR TRANSFER OF DATA

Martin Wilhelm Ivan Jeppsson, Bromma; Bruce William Lindstrom, Ekero, both of Sweden, and David John Russell, Heidelberg, Australia, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Sept. 12, 1974, Ser. No. 505,255
Claims priority, application Sweden, Sept. 27, 1973, 7313161
Int. Cl.[2] H04J 3/06
U.S. Cl. 179—15 BF 5 Claims



1. In a time division multiplex transmission link for the transfer of binary data from a number of inlets to a corresponding number of outlets, the combination comprising a first multiplexor, a first transmission line and a first multiplexor connecting the inlets to the outlets, a second multiplexor, a second transmission line and a second demultiplexor also connecting the inlets to the outlets, each of said multiplexors generating sampling values resulting from the cyclical scanning of the inlets in response to the receipt of first addressing signals wherein each addressing signal is associated with one of the inlets, each sampling value representing the instantaneous value of the data when an inlet is scanned, means for transferring the sampling values from said multiplexors via the associated transmission line to the associated demultiplexor, means in the demultiplexors for transferring the received sampling values to the outlets in response to the receipt of second addressing signals, wherein each second addressing signal is associated with one of the outlets, a first addressing means for sequentially generating a first set of said first addressing signals for transfer to said first multiplexor, a second addressing means for sequentially generating a second set of said first addressing signals for transfer to said second multiplexor, said first and second sets being interleaved in time, a third addressing means for sequentially generating a first set of said second addressing signals for transfer to said first demultiplexor, a fourth addressing means for sequentially generating a second set of said second addressing signals for transfer to said second demultiplexor, said first and second sets of said second addressing signals being interleaved in time, and synchronizing means for intersynchronizing said addressing means.

3,940,567

MULTIPLEX TRANSMISSION SYSTEM ON-OFF SIGNAL

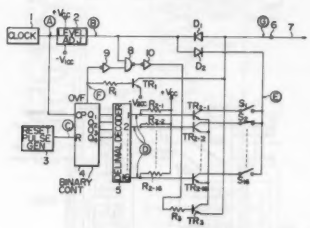
Shinichi Iki, Sagamihara, and Hideaki Kosugi, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Nov. 29, 1974, Ser. No. 528,240

Claims priority, application Japan, Dec. 5, 1973, 48-135256; Dec. 5, 1973, 48-135257

Int. Cl.² H04J 3/12

U.S. Cl. 179—15 BY 15 Claims



1. A multiplex transmission system for transmitting a plurality of ON-OFF signals respectively corresponding to a plurality of channels through at least one transmission line, which comprises:

a transmitter including a clock pulse generator for generating clock pulses, a first level adjuster connected to said clock pulse generator for adjusting the top level of said clock pulses at a positive or negative level and the bottom level at a negative or positive middle level, first pulse sequence generator having the same number of output lines as the channels, for repeatedly producing pulse sequences in accordance with said clock pulses, each pulse sequence consisting of the same number of channel pulses respectively appearing on said output lines in synchronizm with said clock pulses, said first pulse sequence generator producing reset pulses each appearing at a leading position of each pulse sequence and each having an utmost negative or positive level of amplitude and applying said reset pulses to said transmission line, first gate means for passing therethrough the negative or positive component of the level-adjusted clock pulses to said transmission line, and a first gate circuit connected to said output lines, for passing therethrough the positive or negative component of the level-adjusted clock pulses to said transmission line in accordance with said channel pulses and said ON-OFF signals; and

a receiver including a separator for separating from each other negative and positive pulse signals on said transmission line, a reset pulse separator for separating said reset pulses from said negative pulse signal, a second level-up circuit connected to said separator for adjusting the top level of said negative pulse signal at said utmost positive or negative level second pulse sequence generator having the same number of output lines as the channels, for repeatedly producing the same pulse sequences as said pulse sequence in accordance with the separated reset pulses and the level-adjusted negative or positive pulse signal, the channel pulses respectively appearing on said output lines of said second pulses sequence generator, a plurality of second gate circuits connected to said output lines of said second pulse sequence generator, each for passing therethrough the separated positive or negative pulse signal when it is triggered by one of said channel pulses.

3,940,568

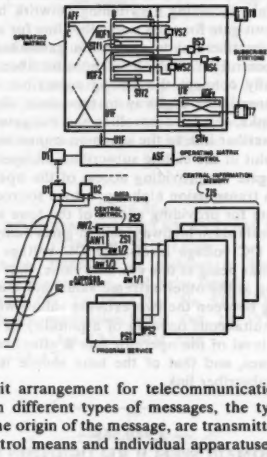
CIRCUIT ARRANGEMENT FOR TELEPHONE EXCHANGE INSTALLATIONS WITH CENTRAL CONTROL MEANS AND A PLURALITY OF INDIVIDUAL APPARATUSES HAVING A COMMON INFORMATION COMMUNICATION LINE CONNECTING THE INDIVIDUAL APPARATUS TO THE CENTRAL CONTROL MEANS

Karl Rutkowski, Pullach; Helmuth-Joachim Bock, Munich, and Peter Gerke, Grafelfing, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation-in-part of Ser. No. 780,461, Dec. 2, 1968, abandoned. This application Feb. 3, 1971, Ser. No. 112,224

Int. Cl.² H04Q 3/54

U.S. Cl. 179—18 ES 3 Claims



1. A circuit arrangement for telecommunication installations wherein different types of messages, the type being a function of the origin of the message, are transmitted between a central control means and individual apparatuses, comprising:

transmission line means connecting said central control and said individual apparatuses for information exchange,

said individual apparatuses being formed into groups of like type,

means associated with each said group of individual apparatuses for transmitting over said line means address information particularized to that group, indicating the identity of the group, and thereby the type of apparatus in that group,

said individual apparatuses otherwise being operative to transmit information signals of like characteristics,

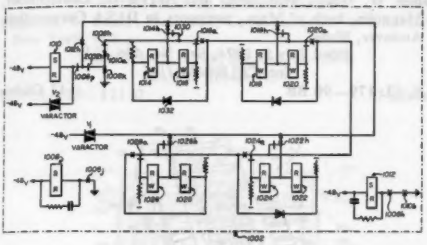
a plurality of connection control means interposed in said transmission line means between said individual apparatuses and said central control means, each of said connection control means being connected to a plurality of individual apparatuses, each said connection control means including means for selecting one of a plurality of information signals received from the respective individual apparatuses connected thereto and for effecting a connection of the individual apparatus causing the transmission of the selected information signal to said transmission line means, said connection control means further including means for determining the address of an individual apparatus upon the production of an information signal from said individual apparatus and for transmitting said address jointly with the information to be transmitted to said central control means and

means in said central control means for evaluating said information signals and said address information and for interpreting said evaluated information signals in accordance with the result of the evaluation of said address information.

3,940,569
PROGRAMMABLE TOLL RESTRICTOR

Leslie B. Schonbrun, Port Washington, and Friedrich W. Schwaar, West Islip, both of N.Y., assignors to E & M Communications Corporation, New York, N.Y.

Filed Aug. 8, 1973, Ser. No. 386,620
Int. Cl.² H04M 3/38
U.S. Cl. 179—18 DA 14 Claims



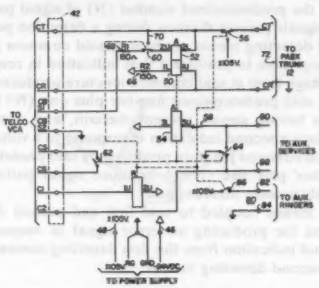
1. A toll restrictor for use in determining whether attempts to complete a trunk call are unrestricted, said toll restrictor being responsive to at least a first successively dialed three digit code of said call from said trunk and providing a control signal in response to said first dialed three digit code being a restricted code to prevent the completion of a call having said first dialed three digit code, said toll restrictor comprising a binary counting chain portion and a digit registration portion, said binary counting chain being responsive to dial pulses associated with each of said dialed digits in said code for providing a binary equivalent thereof, said dialed digits being successively individually provided to said counting chain one at a time; said counting chain portion successively individually providing said dialed digit binary equivalents to said registration portion for registration of said dialed digits; and said registration portion comprising a first and a second binary to decimal converter means for converting said first and second dialed digit binary equivalents to respective first and second signals corresponding to the equivalent decimal digit, said second binary to decimal converter means being further operable to convert said third dialed digit binary equivalent to a third signal corresponding to the equivalent decimal digit, first relay means responsive to said first and second signals for initially registering the first two successively dialed digits of said first dialed three digit code as a first tens digit group and responsive to said third signal for registering said last successively dialed digit of said first dialed three digit code as a second ones digit group, said first tens digit group enabling the provision of a family of ten three digit codes having a common first two dialed digits, and second relay means responsive to at least said first tens digit group for providing said control signal when at least said tens digit group indicates a restricted three digit code.

3,940,570
APPARATUS FOR COMBINING A CENTRAL TELEPHONE TRUNK LINE WITH A CUSTOMER TELEPHONE TRUNK LINE

Edward Goudikian, Commack, N.Y., assignor to Tele-Assemblies, Farmingdale, N.Y.

Continuation of Ser. No. 167,418, July 29, 1971. This application Aug. 5, 1974, Ser. No. 495,079
Int. Cl.² H04M 7/14
U.S. Cl. 179—18 AH 5 Claims

1. In a system for combining a central telephone trunk line of a central telephone exchange with the trunk line of a customer exchange having power feed, ring trip and dial pulse functions, wherein said central telephone exchange is provided with means for separating the dial, talk, and ring functions into a first partial circuit for providing a service signal to and from said customer trunk line, a second partial circuit for providing a ring signal to said customer trunk line, and a third partial circuit for voice transmission operable by completion of said first partial circuit, an interface system comprising a first circuit connected to said first partial circuit for controlling the operation of each of the power feed, ring trip and dial pulse of said customer exchange, a second circuit connected to said second partial circuit for controlling the ring signal from said telephone exchange, and a third circuit connected to said third partial circuit, a first relay located in a said second circuit having a winding connected between a DC source of current and ground, said first relay having a normally closed contact located in said third circuit operable on activation of said first relay to connect a lead of said customer trunk line to a source of AC ring current, a second relay located in said

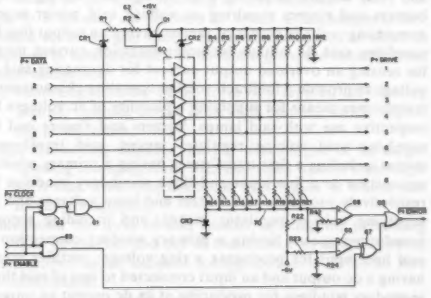


third circuit having at least two windings and a single core, said relay being operable by a current through either of said windings, one of said windings being connected between a DC source of current and one lead of said customer trunk line, the other of said windings being connected between ground and the other lead of said customer trunk line, said second relay having a normally open first contact in said first circuit operable on looping of said customer trunk line to complete said first partial circuit and establish service with said telephone exchange, and a normally closed second contact in said second circuit operable on looping of said customer trunk line to disconnect said first relay from said DC source of current and discontinue the AC ring current.

3,940,571
DRIVE CIRCUITRY WITH ERROR DETECTION

Albert H. Ashley, Holliston, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 4, 1974, Ser. No. 520,413
Int. Cl.² H04M 3/00; G06F 11/08
U.S. Cl. 179—18 GF 7 Claims



1. Apparatus for transmitting signals along a plurality of paths and for determining whether or not signals are being transmitted on a predetermined number of the paths, said apparatus including in combination

a plurality of signal paths;

a resistance network comprising an equal plurality of resistances, each resistance having one end connected to a different one of said signal paths and the other end connected to a common juncture, the voltage level produced at the common juncture being proportional to the number of signal paths having signals present thereon;

first detecting means coupled to said common juncture and operable to produce a first indication in response to a voltage level at said common juncture produced by a predetermined number (N) or more signal paths having signals present thereon during a detection period, and operable to produce a second indication in response to a voltage level at said common juncture produced by less than the predetermined number (N) of signal paths having signals present thereon during a detection period;

second detecting means coupled to said common juncture and operable to produce a first indication in response to a voltage level at said common juncture produced by less than said predetermined number plus one (N+1) signal paths having signals present thereon, and operable to produce a second indication in response to a voltage level at said common juncture produced by said predetermined number plus one (N+1) or more signal paths having signals present thereon; and

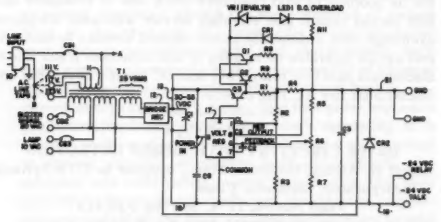
output means coupled to said first and second detecting means for producing an error signal in response to a second indication from the first detecting means or from the second detecting means.

3,940,572

POWER SUPPLY FOR KEY TELEPHONE SYSTEM

Robert L. Burgess, Upland, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Filed Apr. 24, 1974, Ser. No. 463,439
Int. Cl.² H04M *19/00*
U.S. Cl. 179—77 **1 Claim**



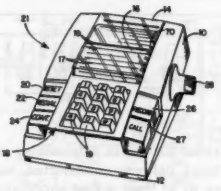
1. A power supply for a key telephone system having talk and relay circuits requiring a dc voltage and having lamps, buzzers and ringers requiring ac voltage said power supply comprising: voltage regulator means having an output line for supplying said dc voltage including foldback current means for sensing an overload output current for decreasing said dc voltage to provide a foldback voltage operating characteristic; transformer means for supplying a plurality of ac voltages for respective use with said lamps, buzzers and ringers and for supplying said voltage regulator means, said transformer means including a first transformer having a primary winding connection to a line input and three secondary windings for respectively providing said buzzer and lamp voltages and for supplying voltage regulator means, and including second transformer means having a primary winding connection to said line input for producing a ring voltage; rectifier means having a dc output and an input connected to one of said three secondary windings for producing at its dc output an unregulated dc voltage, said dc output being connected to and supplying said voltage regulator means; and overload means for visually indicating when said dc voltage on said output line decreases below a predetermined value including a series connected Zener diode and light emitting diode both connected between said output line and said unregulated dc output, said light emitting diode being activated when a sufficient voltage difference across said Zener diode causes it to conduct.

3,940,573

MANUALLY ACTUABLE REPERTORY DIALER

James W. Healy, Wakefield, and Argyle G. Lautzenhiser, Magnolia, both of Mass., assignors to DASA Corporation, Andover, Mass.

Filed July 5, 1974, Ser. No. 486,111
Int. Cl.² H04M *1/46*
U.S. Cl. 179—90 BB **11 Claims**



1. A telephone dialer comprising:

a magnetic recording medium;

means for recording representations of telephone numbers on respective portions of said recording medium including a magnetic record/reproduction head disposed in operative association with said magnetic recording medium;

means for selectively providing a recording and readout mode;

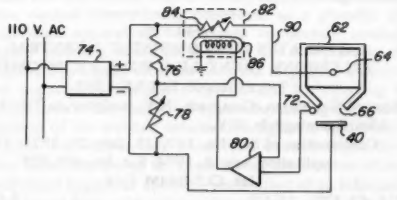
manually actuable mechanically operative means for causing during a first travel portion of a control button relative movement of said magnetic head and said medium to a start position and during a second travel portion of said control button controlled relative movement between said head and said medium from said start to a home position to selectively record or readout said representations of a telephone number.

3,940,574

REPRODUCTION OF INFORMATION FROM INFORMATION-BEARING DISCS

Leland Dale Green, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1973, Ser. No. 426,989
Int. Cl.² G11B *9/06*
U.S. Cl. 179—100.1 B **3 Claims**



1. A method of reproducing information from a surface of an information-bearing disc wherein information is stored in accordance with the spacing between area of peak amplitude of a spiral track on said surface of said disc, and a stylus rides in the spiral track of said disc comprising:

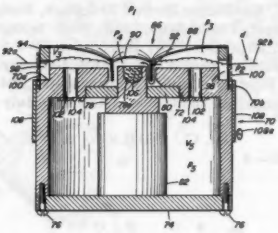
depositing electrostatic charges uniformly on said surface of said disc, and

collecting said electrostatic charges from only the areas of peak amplitude of said spiral track of said surfaces of said disc, said collection of charge being achieved by the flow of said electrostatic charge from said areas of peak amplitude of said spiral track of said surface of said disc to said stylus riding in said spiral track of said disc.

3,940,575
DIRECTIONAL MICROPHONE

Benjamin B. Bauer, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Mar. 3, 1975, Ser. No. 554,586
Int. Cl.² H04R 1/38
U.S. Cl. 179—121 D 7 Claims

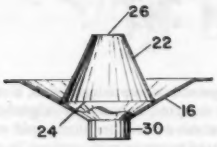


1. In a dynamic microphone, the combination comprising,
a body closed at one end by an annular magnetic pole-piece,
an inner magnetic pole-piece supported coaxially within said annular pole-piece and therewith defining a circular air gap,
an annular diaphragm support having a diameter much larger than the diameter of said air gap supported on said body generally coplanar with said air gap,
a circular vibratile diaphragm secured at its periphery to said annular support, said diaphragm having an active outer area portion of coneiform shape which intersects with a central portion of dome shape, the active area of said outer portion being larger than the area of said dome portion,
a circular coil having a diameter substantially equal to the diameter of said dome portion secured to said diaphragm concentrically with said dome portion and supported within said air gap, one side of said diaphragm being adapted to receive external sound pressure and said coil producing electric output signals as a function of the sound pressure impinging upon the diaphragm,
said diaphragm, said diaphragm support, and the surfaces of said annular and inner pole-pieces which confront said diaphragm enclosing a total volume divided by said air gap into two portions, the partial volume under the dome portion of the diaphragm being much smaller than the partial volume under the coneiform portion of the diaphragm,
first duct means formed in said diaphragm support having acoustical impedance adapted to serve as an acoustic duct between the external atmosphere and said total volume,
a second volume within said body enclosed in part by the surface of said annular pole-piece opposite the surface thereof which confronts said diaphragm,
second duct means formed in said annular pole-piece having acoustical impedance adapted to serve as an acoustic duct between said total volume and said second volume,
the acoustical impedance of said first and second duct means and said total and second volumes being so interrelated as to give the microphone a predetermined directional sensitivity pattern,
the partial volume under the coneiform portion of said diaphragm being sufficiently larger than the partial volume under the dome portion of said diaphragm that any sound pressure generated within the partial volume under the dome portion does not significantly affect the directional sensitivity pattern.

3,940,576
LOUDSPEAKER HAVING SOUND FUNNELLING ELEMENT

Herbert J. Schultz, 2627 Bourbon St., No. 3D, Orange, Calif. 92665

Filed Mar. 19, 1974, Ser. No. 452,614
Int. Cl.² H04R 7/12
U.S. Cl. 179—181 R 8 Claims



3. In a speaker of the kind in which a diaphragm is suspended at its margins from a frame and is caused to move in response to forces applied to its mid region, the improvement which comprises:
a funnelling member in the form of a tapered tube having a larger opening at one of its ends than the smaller opening at the other;
said funnelling member having the margin of its larger opening in engagement with and fixed to said diaphragm such that it encompasses said mid region at which said forces are applied;
means in the form of said smaller opening for permitting flow of air into and out of the interior of said funnelling member as an incident to application of force to said diaphragm;
said diaphragm being elliptical and conical;
said funnelling member being elliptical and conical and having its central line substantially coincident with that of said diaphragm; and
said funnelling member becoming less elliptical and approaching circularity in the direction away from said diaphragm and having a taper such that the diameter of the smaller opening is no greater than half of the greatest width of the larger opening of said member.

5. In a speaker of the kind in which a diaphragm is suspended at its margins from a frame and is caused to move in response to forces applied to its mid region, the improvement which comprises:
a funnelling member in the form of a tapered tube having a larger opening at one of its ends than the smaller opening at the other;
said funnelling member having the margin of its larger opening in engagement with and fixed to said diaphragm such that it encompasses said mid region at which said forces are applied;
means in the form of said smaller opening for permitting flow of air into and out of the interior of said funnelling member as an incident to application of force to said diaphragm;
the area of said diaphragm encompassed by said funnelling member being less than its total area;
said funnelling member having a length greater than the average dimension across said larger end of the funnelling member.

3,940,577

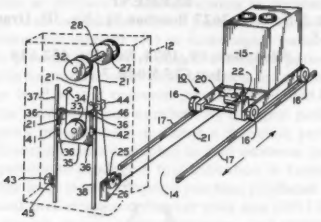
METHOD AND APPARATUS FOR CONTROLLING A TRANSFER CAR FROM A REMOTE STATION

Donald E. Christofer, Willowick, Ohio, assignor to Stock Equipment Company, Cleveland, Ohio

Filed June 12, 1974, Ser. No. 478,588

Int. Cl.² H02G 11/00

U.S. Cl. 191—12 R **15 Claims**



1. Transfer apparatus comprising a wall, a carriage on one side of said wall adapted to move in a predetermined path between predetermined limit positions, said carriage having drive means adapted to move said carriage in either direction in said path; an elongated flexible control member connected to said carriage and passing through said wall to the other side of said wall; a rotatable member at the side of said wall at which said carriage is located onto which said flexible member winds as the carriage travels in one direction and from which it unwinds as the carriage travels in the other direction; a rotatable member at the other side of said wall to which said flexible member extends and on which said flexible member winds when said carriage is traveling in one direction and from which it unwinds when said carriage is traveling in the other direction; and means at the side of the wall opposite the side at which said carriage is located for controlling said drive means in response to the direction and amount of rotation of at least one of said rotatable members, whereby said carriage is stopped when reaching said limit positions.

3,940,578

KEYBOARD STRUCTURE HAVING PANEL MOUNTED KEY ACTUATORS WITH ELECTRICAL COMPONENT OPERATING ELEMENT

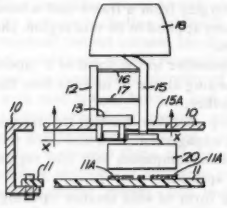
Peter Pointon, West Molesey, England, assignor to Alphameric Keyboards Limited, England

Filed Apr. 9, 1974, Ser. No. 459,901

Claims priority, application United Kingdom, Apr. 9, 1973, 16939/73

Int. Cl.² H01H 13/14, 36/00; G06C 7/02

U.S. Cl. 200—5 A **17 Claims**



1. A keyboard for providing an electrical output on depression of a key, said keyboard comprising a chassis and a plurality of keys, wherein each key is formed of two substantially rigid members spaced apart with facing surfaces and at least a pair of parallel spaced resilient strips lying in separate planes spaced in a direction normal to said surfaces, said strips being of equal length, each extending between said rigid members and joining said rigid members to form a parallel motion linkage, one of said rigid members being mounted on the chassis with the planes of the strip parallel to the chassis, a key top mounted on the upper end of the second of said rigid members whereby, by depression of the key top, the second of the rigid members is movable towards and away from the chassis without tilting with respect to the chassis, and an operating element on the lower end of the second rigid member arranged for co-operation with an electric circuit element fixedly located with respect to the chassis.

3,940,579

PLURAL SWITCH CONSTRUCTION HAVING ROTARY AND LINEAR SWITCH CONTACT ASSEMBLIES OPERATED BY INDEPENDENT OPERATORS

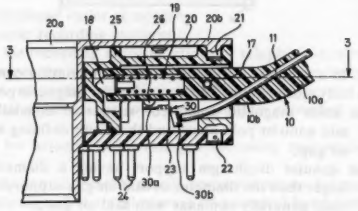
Harro Bühl, Kirchheim; Herbert Erdelitsch, Bietigheim; Otto Machalitzky, Pleidelsheim, and Wolf Seitter, Marbach (Neckar), all of Germany, assignors to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH, Germany

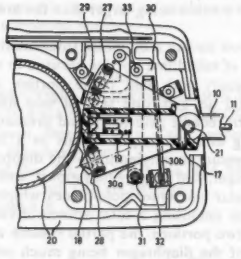
Filed July 16, 1974, Ser. No. 488,984

Claims priority, application Germany, July 16, 1973, 2336064

Int. Cl.² H01H 9/00, 3/16

U.S. Cl. 200—4 **6 Claims**





1. A switch, comprising a housing, a U-shaped spring contact in said housing having a first spring contact portion in a first plane and a second spring contact portion in a second plane disposed at an angle from said first plane, a switch lever, means disposed on and within said housing pivotally supporting said switch lever for pivotal movement in said first plane and said second plane, a first contact spaced from said first spring contact portion for operating a first operating circuit, a second contact spaced from said second spring contact portion for operating a second operating circuit, and a switching rod carried on said lever and being movable relatively thereto, said rod being displaceable independently of the pivotal position of said lever and having a rod portion engageable with said second spring contact portion to move it into engagement with said second contact and to permit disengagement therefrom, said lever being pivotal at least in one direction and having a lever portion engageable with said first

spring contact portion to move it into engagement with and permit its disengagement from said first contact.

3,940,580

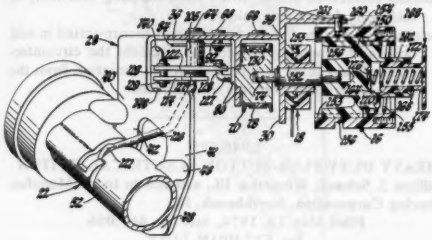
STARTER SWITCH FOR ENGINE RESPONSIVE TO VARIOUS TRANSMISSION OPERATIONAL STATES

Richard D. Williams, Fairport, and Fred G. Michaels, Pittsford, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 325,325, Jan. 23, 1973, Pat. No. 3,844,180. This application Aug. 19, 1974, Ser. No. 498,756

Int. Cl.² H01H 9/06

U.S. Cl. 200—61.85 **2 Claims**



1. An actuating mechanism comprising a fixed hub member having an axial opening formed therethrough, a starter switch secured about said hub member and having two spaced sets of contacts mounted in a predetermined circle therein, a shaft rotatably mounted and axially located in said axial opening, rotary knob means secured on an end of said shaft and being manually rotatable into a plurality of predetermined positions including first and second positions, an axial pocket formed in the outer end of said rotary knob means, a starter button having a cylindrical extension formed thereon and slidably mounted in said axial pocket, a longitudinal passage formed through said rotary knob means parallel to said axial pocket and having the axis thereof aligned with said predetermined circle, a spring partially compressed and mounted through said cylindrical extension between said starter button and the bottom of said axial pocket, stop means formed on said cylindrical extension and around said axial pocket for limiting the outward movement of said cylindrical extension in said axial pocket under the force of said spring, and a rod-like member formed on said starter button and slidably mounted through said longitudinal passage and being operable to enter and thereby close one of said respective sets of contacts only when said rotary knob means is positioned in one of said respective first and second positions upon manual depression of said starter button against the force of said spring.

3,940,581

SWITCH CONSTRUCTION, PARTICULARLY FOR INDICATING AUTOMOBILE SEAT LOADING

Helmut Dörr, Sachsenheim, Germany, assignor to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH, Germany

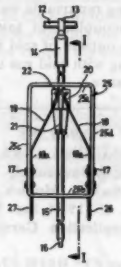
Filed Aug. 29, 1974, Ser. No. 501,840

Claims priority, application Germany, Sept. 15, 1973, 2346578

Int. Cl.² H01H 3/14

U.S. Cl. 200—85 A **3 Claims**

1. A switch, particularly a load responsive switch for indicating automobile seat loading, comprising a pair of first and second contact springs, means mounting said first and second contact springs so that their ends are biased together in electrical contacting engagement, a movable actuating rod having one end with means for connecting it to the seat which is to bear the load, and a switching member having a portion of non-conductive material carried by said actuating rod and movable therewith through a path to come between said first and second contact springs to separate them and to break the electrical connection therebetween, a housing having end walls with bores through which said actuating rod extends and which provide means for guiding said actuating rod for axial



movement, said switching member having a sleeve portion with a bore through which said rod extends and being frictionally engaged with said rod so as to be displaceable therealong, said portion of non-conductive material comprising an upstanding switch contact separating member which is movable between said spring contacts.

3,940,582

MECHANICALLY OPERATED GAS BLAST CIRCUIT INTERRUPTER HAVING GASTIGHT ENCLOSURES

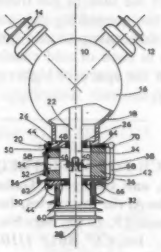
Cesar Castelli, Montfleury, and Eugene Vincent, La Tronche, both of France, assignors to Merlin Gerin, Grenoble, France

Filed Jan. 28, 1974, Ser. No. 436,925

Claims priority, application France, Mar. 7, 1973, 73.08648

Int. Cl.² H01H 33/56

U.S. Cl. 200—148 B **7 Claims**



1. A gastight gas-blast circuit interrupter of the puffer-type comprising:

at least one arc-extinguishing chamber having a gastight separable contact means containing enclosure filled with an arc-extinguishing gas under a pressure above atmospheric pressure, a seal in the wall of said enclosure, and a movable contact-operating rod traversing said wall in a gastight manner through said seal;

hollow insulating support means to support said chamber an appropriate distance from ground potential and having a gastight enclosure containing the same gas under a pressure above atmospheric pressure as the enclosure of said chamber, a seal in the wall of said enclosure of said support means, and a movable control rod traversing said wall of said enclosure of said support means in a gastight manner through the seal thereof,

said contact-operating rod and said control rod having confronting end portions extending externally of said enclosures and adapted to be coupled together in motion-

transmitting relation to permit operation of said contact-operating rod by actuation of said control rod;

a gastight hollow junction housing joining said enclosures and accommodating said end portions,

said seals being disposed in the partition wall portions common to said housing and to said enclosures, respectively, said housing having removable wall means permitting the coupling and uncoupling of said end portions therethrough from the outside of said housing, and means for filling said housing with said gas under a pressure above atmospheric pressure.

3,940,583
ARC QUENCHING ARRANGEMENT

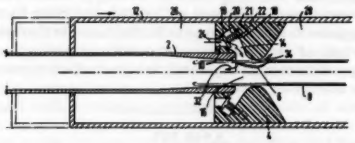
Walter Hertz, Erlangen-Buckenhof, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 25, 1974, Ser. No. 454,544

Claims priority, application Germany, Mar. 30, 1973, 2316009

Int. Cl.² H01H *33/70*

U.S. Cl. 200—148 A **7 Claims**



1. In a gas-flow circuit breaker, such as a blast piston breaker, in which gas is directed from a space of higher pressure to the vicinity of a quenching gap, said breaker including a fixed contact and a movable contact which when separated from an arc in said quenching gap, an improved arrangement for quenching and arc in said gap comprising:

a. insulating material arranged to form a plurality of flow canals to direct the flow of gas from the space of higher pressure onto the quenching gap, said flow canals being evenly spaced concentric to said quenching gap; and

b. a check valve in each of said canals arranged to permit flow only from the space of higher pressure toward said quenching gap.

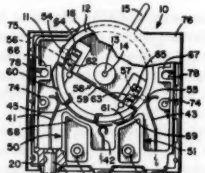
3,940,584
COAXIAL SWITCH FOR HIGH FREQUENCY SIGNALS

Jack D. Cauldwell, and George P. Gallanis, both of Dayton, Ohio, assignors to Arvin Industries, Inc., Columbus, Ind.

Filed June 19, 1974, Ser. No. 480,689

Int. Cl.² H01P *1/10*

U.S. Cl. 200—153 S **4 Claims**



1. A switch for use in wide band systems handling high frequency signals, comprising:

a hollow body having at least an inner surface which is electrically conductive,

first, second and third terminals on said body located in spaced relation,

each of said terminals having contact portions connected to said conductive surface of said body and also having contacts projecting into said body,

a rotor of electrically non-conductive material,

a movable contact carried on the circumference of said rotor and of a length to connect the contact of said first terminal alternatively with the contacts of either said second or third terminal,

means rotatably supporting said rotor in said body for arcuate movement of said movable contact to alternative positions connecting the first terminal to either the second or third terminal,

means connected to said rotor and extending externally of said body for moving said rotor,

electrically conductive partition means incorporated in said body and extending inwardly to adjacent the circumference of said rotor to form barriers to radiation from the exposed terminal contacts to each other.

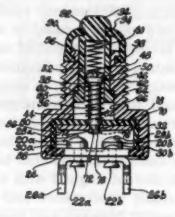
3,940,585
HEAVY DUTY PUSH-BUTTON ELECTRICAL SWITCH

William J. Schaad, Winnetka, Ill., assignor to Indak Manufacturing Corporation, Northbrook, Ill.

Filed May 13, 1974, Ser. No. 469,056

Int. Cl.² H01H *13/52*

U.S. Cl. 200—159 R **16 Claims**



1. An electrical switch,

comprising a casing,

a carriage member mounted in said casing for linear movement,

a conductive contactor disk mounted on said carriage member for free rotation relative thereto,

at least two conductive contacts mounted in said casing opposite said contactor disk for engagement by said disk to complete an electrical circuit between said contacts,

spring means acting between said carriage member and said casing for biasing said carriage member in a direction to move said contactor disk out of engagement with said contacts,

and a backstop in said casing and engageable by said contactor disk when said contactor disk is moved away from said contacts under the impetus of such spring means,

the engagement between said backstop and said contactor disk being effective to prevent rotation of said contactor disk,

the engagement between said contactor disk and said contacts also being effective to prevent rotation of said contactor disk,

said contactor disk being freely rotatable when in transit between said contacts and said backstop,

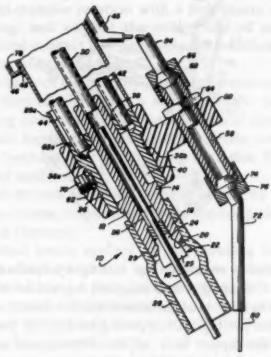
whereby vibration and other environmental factors cause said contactor disk to rotate relative to said carriage member so that said contactor disk presents fresh surface elements to said contacts during repeated cycles of use.

3,940,586

ELECTRIC ARC WELDING

James B. Stearns, and Donald W. Schmerling, both of York, Pa., assignors to ESAB Manufacturing, Inc., Charlottesville, Va.

Filed Mar. 26, 1973, Ser. No. 344,909
Int. Cl.² B23K 9/12
U.S. Cl. 219—75 22 Claims



1. A manual arc welding torch comprising a handle to be guided by an operator, a head mounted on said handle, said head supporting a non-consumable electrode which is elongated along its longitudinal axis and having an outer end for establishing and maintaining an arc which extends substantially along said longitudinally axis outwardly from said outer end of said electrode toward a work piece spaced therefrom; conductor means for supplying current to said electrode for establishing and maintaining said arc; and means for feeding filler wire disposed such that a fed filler wire forms a feed path intersecting an extension of said longitudinal axis at a point outwardly of said outer end of said electrode, said feeding means including means for automatically, repetitively, advancing said filler wire after said arc is established and during the duration of said arc, said automatic, repetitive, advancing means advancing said filler wire along said feed path relative to said arc in repetitive incremental advancing strokes between alternate periods of dwell.

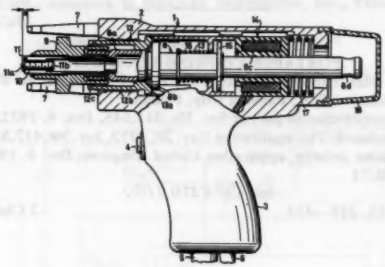
3,940,587

ADJUSTABLE STOP FOR A BOLT WELDING GUN

Norbert Oehry, Fl-Schaan, Liechtenstein, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 11, 1974, Ser. No. 514,215
Claims priority, application Germany, Oct. 15, 1973, 2351692
Int. Cl.² B23K 9/22
U.S. Cl. 219—98 10 Claims

1. Welding gun for a capacitor discharge welding device comprising a housing forming an axially extending space therein having a forward end from which a bolt is welded to a workpiece and a rearward end, a plurality of supporting feet secured to and extending axially outwardly from the forward end of said housing, a thrust unit mounted in the space in said housing for movement in the axial direction of the space between a forward rest position and a rearward position in which position the thrust unit is held ready to be displaced forwardly for carrying out the welding operation, said thrust unit having a forward end adjacent the forward end of said housing and an oppositely directed rearward end closer to the rearward end of said housing, a collet chuck supported at the forward end of said thrust unit and extending axially outwardly therefrom and arranged to hold a bolt in position prior to the welding operation, a holding magnet located within and adjacent the rearward end of said housing, said holding magnet arranged to releaseably hold said thrust unit in its rearward position, a stop positioned within said housing in the path of movement of said thrust unit toward its forward rest position, said thrust unit including a spring biasing said thrust unit toward said stop and holding said thrust unit against said stop when said thrust unit is in the forward rest position, said collet chuck including stop means limiting the extent to which a bolt is inserted into the collet chuck, the axial dimension denominated as the lead in the forward rest position of said thrust unit between the free ends of said supporting feet spaced forwardly from the forward end of said housing and the forwardly located end of the bolt held in said collet chuck against said stop means and facing outwardly from said housing and forwardly of the free ends of said supporting feet being adjustable, wherein the invention comprises that said stop is axially adjustable relative to said housing and affords adjustment for the lead between the free ends of said supporting feet and the outwardly facing end of the bolt held in the collet chuck.



3,940,588

BOLT-WELDING GUN WITH MOVABLE SUPPORTING LEGS

Norbert Oehry, and Rainer Wild, both of Schaan, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Sept. 24, 1974, Ser. No. 508,899
Claims priority, application Germany, Sept. 25, 1973, 2348174
Int. Cl.² B23K 11/28
U.S. Cl. 219—98 8 Claims

1. A bolt-welding gun having a front end from which bolts are welded to a surface, comprising a housing having a central axis extending in the direction in which the axes of bolts are oriented for attachment to a surface, a ring-shaped housing part secured to said housing at the front end of the gun, supporting legs mounted on and extending outwardly from the ring-shaped housing part in angularly spaced relation to provide at least a 3-point support for the gun as a bolt is welded

onto a surface, wherein the improvement comprises that said ring-shaped housing is constructed for varying the positional relation of said supporting legs at least in relation to the central axis of said housing so that the position of said supporting legs can be changed in accordance with various conditions experienced in welding the bolts to a surface, and at least a portion of said ring-shaped housing part having at least one said supporting leg mounted thereon is pivotally displaceable about an axis disposed in spaced parallel relation with the central axis of the housing.

3,940,589

PORTABLE COOKING EQUIPMENT

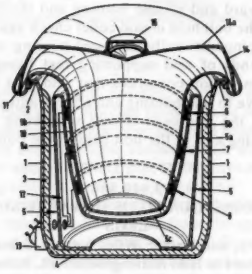
Earl Silas Tupper, Panama City, Panama, assignor to Tupl (Panama) S.A., Panama City, Panama

Continuation-in-part of Ser. No. 311,545, Dec. 4, 1972, abandoned. This application Nov. 20, 1973, Ser. No. 417,583

Claims priority, application United Kingdom, Dec. 8, 1971, 57035/71

Int. Cl.² F27D *11/02*

U.S. Cl. 219—433 **2 Claims**



1. A portable article of cooking equipment consisting of: an enclosure member, open at the top and comprising a surrounding wall formed of heat-insulating material and a base formed of heat-insulating material: a resilient support member within said enclosure member and having an internal wall portion defining an inner chamber open at the top and of decreasing cross-section from top to bottom, and a resilient support for said internal wall portion, said internal wall portion being spaced from said surrounding wall and from said base of said enclosure member; a plurality of strip electrical-resistance heating elements formed into a series of like loop-shaped members supported on the inner surface of said internal wall portion in a horizontal disposition and vertically spaced one from the other, thereby defining a space for receiving a cooking vessel resting by gravity against each element; resilient support means on said internal wall portion, said elements being mounted on said resilient support means to accommodate small deformations of fit between the elements and a cooking vessel held therein; electrical insulation means spacing said elements at least from said internal wall portion; separate electrically insulating electrical connections, one for each heating element; and electrical switching means mounted to the outer wall of said enclosure member and connected to said electrical connections, whereby said heating elements can be selectively controlled.

3,940,590

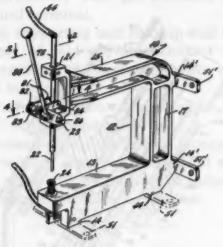
FUSED EYELETTING MACHINE

Loring E. Young, Jefferson, and William Jordan Siegel, Silver Spring, both of Md., assignors to Pace, Incorporated, Silver Spring, Md.

Filed July 16, 1974, Ser. No. 489,035

Int. Cl.² B21J *5/08*

U.S. Cl. 219—150 V **3 Claims**



1. In a portable machine for setting eyelets and the like comprising a C-shaped frame adapted to rest on a work surface; a lower setting tool mounted on the lower arm of the frame, an upper setting tool opposing said lower tool movably mounted on the upper arm of the frame, and a manually operated stop arrested travel actuating means associated with said upper tool for moving said upper tool into setting engagement with said lower tool; the improvement which comprises:

a bifurcated upper arm of the frame split into two tool mounting fingers, a mandrel portion of said upper tool being mounted in apertures in said fingers movable relative thereto; and

the travel actuating means mounted on the upper tool mandrel portion at a location thereon between said fingers.

3,940,591

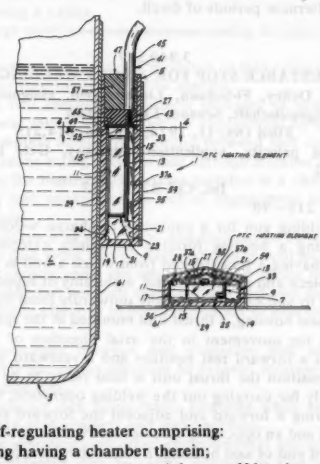
SELF-REGULATING ELECTRIC HEATER

Youn H. Ting, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 1, 1974, Ser. No. 484,850

Int. Cl.² H05B *3/02*; H01C *7/02*

U.S. Cl. 219—544 **3 Claims**



1. A self-regulating heater comprising:

a housing having a chamber therein;

a heating element constituted by a self-heating positive temperature coefficient resistor having low initial resis-

tance which increases abruptly as its temperature rises above a given level, said element having first and second substantially parallel surfaces spaced from one another, said surfaces each having a layer of electrically conductive material applied thereto for forming an ohmic contact surface;

a heat sink comprising a plate of thermally and electrically conductive material, said heat sink plate being positioned in said housing chamber so that one face of said plate is in heat-transfer relation with a first inside surface of said housing, and so that the other side of said plate is in electrical contact and heat-transfer relation with said first surface of said element;

spring means of electrically conductive material disposed in said chamber between a second inside surface of said housing and said second surface of said element for biasing said heating element and said plate toward and into close heat-transfer relationship with the first inside surface of said housing;

first and second terminal means carried by the plate and spring means, respectively, for supplying electrical power to said element;

said second inside surface of said housing being generally trough-shaped and said spring means comprising a spring member having a first portion engageable with said second surface of said element and an outer marginal portion on each side of said first portion bent back on said first portion at an acute angle, said outer marginal portions being resiliently engageable with said trough-shaped surface thereby to guide the spring member as it is inserted into the chamber, to hold the spring member substantially centered widthwise with respect to the housing after said heater is assembled, and to resiliently maintain said element in heat transfer relationship with said plate and to maintain the latter in heat transfer relationship with said housing.

3,940,592
ELECTRICALLY HEATED ALIGNMENT PAD

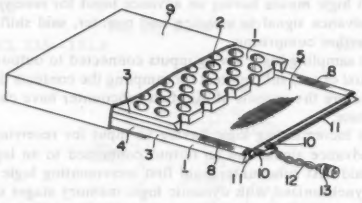
Keiji Shimizu, Tokyo; Hiroshi Yoshida, Musashino; Haruhisa Furuishi, Suita; Yoshihiro Murata, Katano; Hidenori Suzaki, Hirakata; Kuninori Azuma, Ikoma; Kinji Terawaki, Osaka, and Hiroshi Izumi, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma and Japanese National Railways, Tokyo, both of, Japan

Filed Nov. 29, 1973, Ser. No. 419,968

Claims priority, application Japan, Dec. 13, 1972, 47-124278

Int. Cl.² H05B 3/10

U.S. Cl. 219—548 **11 Claims**



1. An electrically heated aligment pad which comprises at least one plate member of thermoplastic resin and at least one thin flat electric heater lying against said plate member for heating said plate member to soften said plate member, said plate member having a large plurality of apertures therein spread substantially uniformly over the whole area of said plate member and into which portions of said plate member around said apertures flow laterally when said plate member is in the heat softened condition and an external compression force is applied thereto for reducing the thickness of said plate, whereby an object through which the compression force is applied can be moved by the reduction of thickness of the alignment pad for adjusting the position thereof in the direction of the force being applied to the alignment pad.

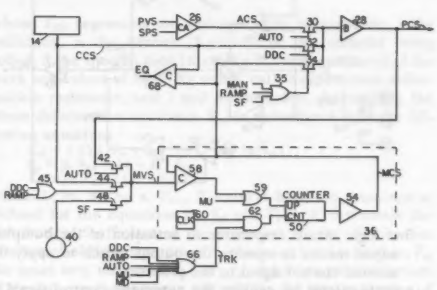
3,940,593
AUTOMATIC PROCESS CONTROLLER WITH DIGITAL MEMORY

Thomas M. Bleak, Whittier, and Paul L. Hansen, Brea, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 13, 1974, Ser. No. 497,098

Int. Cl.² G05B 07/00

U.S. Cl. 235—150.1 **7 Claims**



1. An improved automatic process controller operable in manual, automatic and DDC modes, of the type having;

automatic control means for generating an automatic control signal during the automatic mode related to the deviation of a process value signal from a set-point signal and tracking a manual control signal during the manual mode;

manual control means for generating the manual control signal during the manual mode and tracking the automatic control signal during the automatic mode;

computer control means for generating a DDC signal related to a value generated in a computer during the DDC mode,

an output switch for selectively applying one of the control signals to the process to be controlled, wherein the improvement comprises:

a DDC switch for initiating a transfer to the DDC mode;

logic means responsive to the DDC switch for operating the output switch to apply the manual control signal to the process when a transfer to the DDC mode is initiated;

means responsive to the logic means for adjusting the manual control signal to become equal to the DDC signal at a rate compatible with process requirements; and

equality detecting means responsive to the logic means for operating the output switch to apply the DDC signal to the process after the manual control signal has become equal to the DDC signal.

3,940,594
AUTOMATIC PROCESS CONTROLLER WITH BUMPLESS OPERATION

Thomas M. Bleak, Whittier, and Paul L. Hansen, Brea, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 13, 1974, Ser. No. 497,097

Int. Cl.² G05B 7/00

U.S. Cl. 235—150.1 **18 Claims**

1. An improved automatic process controller having adjustable parameters operable in manual and automatic modes of the type having:

automatic control means for generating an automatic control signal during the automatic mode related to the deviation of a process value signal from a set-point signal,

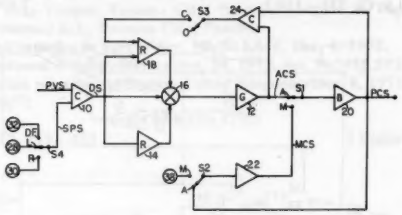
manual memory means for generating an adjustable manual control signal during the manual mode,

an output switch for selectively applying one of the control signals to the process to be controlled,

means to cause the automatic control signal to track the signal applied to the process during the manual mode, and

means to cause the manual control signal to track the signal applied to the process during the automatic mode, wherein the improvement comprises:

bumpless adjust means for initiating a change in the operation of the automatic control means;



first logic means responsive to actuation of the bumpless adjust means to operate the output switch to apply the manual control signal to the process;

a settle circuit for causing the automatic control signal to become equal to the signal applied to the process only when actuated;

second logic means responsive to actuation of the bumpless adjust means for generating a settle time period and for activating the settle circuit during the settle time period; and

third logic means for operating the output switch to apply the automatic control signal to the process at the end of the settle time period.

3,940,595

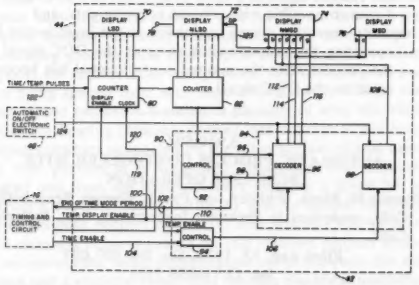
ELECTRONIC THERMOMETER DECODER AND DISPLAY SYSTEM

Robert Bruce Turner, Weymouth, Mass., assignor to American Medical Electronics Corporation, Newton Upper Falls, Mass.

Filed May 30, 1974, Ser. No. 474,400

Int. Cl.² G06M *3/06*

U.S. Cl. 235—92 EA **3 Claims**



1. An electronic thermometer system for measuring and displaying temperature in more than one power of a radix comprising:

a first radix counter for counting pulses representative of the temperature measured;

a first display device for displaying the count in said first radix counter;

a radix power increment switching circuit responsive to said first radix counter cycling through a first radix count for indicating that the first next radix power has been reached; and to said first radix counter cycling through a second radix count for indicating that the second next radix power has been reached;

a second display device for displaying said first next radix power;

a third display device for displaying said second next radix power; and

a decoder responsive to said radix power increment circuit indicating that the first next radix power has been reached for setting a first predetermined number in said second display device and responsive to said radix power increment switching circuit indicating that said second next radix power has been reached for displaying a different predetermined number in said second display device in place of said first predetermined number and displaying a second predetermined number in said third display device.

3,940,596

DYNAMIC LOGIC COUNTER

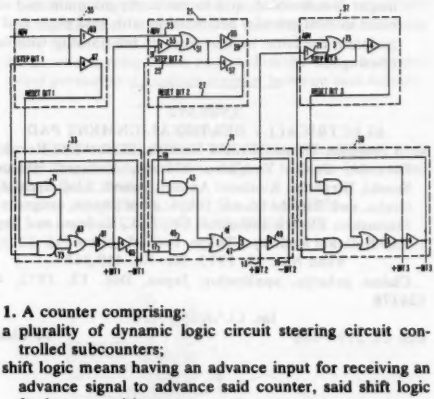
Richard Charles Paddock, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 369,022, June 11, 1973, abandoned.

This application Apr. 24, 1975, Ser. No. 571,144

Int. Cl.² H03K *23/02*

U.S. Cl. 235—92 LG **14 Claims**



1. A counter comprising:

a plurality of dynamic logic circuit steering circuit controlled subcounters;

shift logic means having an advance input for receiving an advance signal to advance said counter, said shift logic further comprising:

first sampling logic having inputs connected to outputs of a first of said subcounters for sampling the contents thereof before the outputs of said first subcounter have changed state;

first incrementing logic having an input for receiving said advance signal and an output connected to an input of said first subcounter, said first incrementing logic being synchronized with dynamic logic memory stages of said first subcounter to increment said first subcounter in response to receipt of said advance signal and to propagate said advance signal;

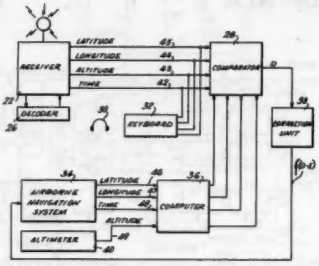
second incrementing logic having an input for receiving said advance signal, an input connected to the output of said first sampling logic and an output connected to an input of a second of said subcounters, said second incrementing logic being synchronized with dynamic logic memory stages of said second subcounter to increment said second subcounter and to propagate said advance signal if s^{j-1} sampled contents of said first subcounter equal a predetermined count.

3,940,597

NAVIGATIONAL ERROR CORRECTING SYSTEM

Paul L. DiMatteo, Huntington, N.Y., assignor to Dynell Electronics Corporation, Melville, N.Y.

Filed Dec. 5, 1974, Ser. No. 529,597
Int. Cl.² G06F 15/20
U.S. Cl. 235—150.2 22 Claims



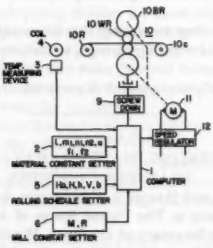
1. A method for determining the position of a predetermined vehicle in a group of vehicles comprising the steps of: measuring the position of said vehicle from aboard said vehicle; measuring the positions of all vehicles within said group from a predetermined reference position; transmitting from said reference position the measured positions of all vehicles to said group simultaneously; comparing in said predetermined vehicle all said measured positions with the position measured from said predetermined vehicle and deriving a comparison value; selecting the position associated with said vehicle from the transmitted positions of all vehicles of said group in dependence on predetermined selection rules; and applying a correction in the position of said predetermined vehicle dependent on said comparison value; said correction being applied when said comparison value is within predetermined limits related to the accuracy of measuring the position of said vehicle from aboard said vehicle, said correction being not applied when said comparison value is ambiguous by being less than a predetermined limit of said accuracy.

3,940,598

METHOD AND APPARATUS FOR CONTROLLING ROLL GAPS OF COLD ROLLING MILLS

Kunio Sekiguchi, Kawagoe, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sept. 25, 1974, Ser. No. 509,227
Claims priority, application Japan, Sept. 28, 1973, 48-109110
Int. Cl.² B21B 37/00
U.S. Cl. 235—151.1 10 Claims



1. A method of controlling the roll gap of a cold rolling mill comprising the steps of measuring the absolute temperature T(°K) of the metal strip being rolled, determining the deformation resistance K_f (kg/mm²) of the metal strip in accordance with an equation

$$K_f = l\,(\bar{r}+m)^{n_1}\cdot 1.\,\epsilon^{n_2}2\exp\,(\alpha/T)$$

where r represents the total reduction, ϵ the strain rate (sec^{-1}), T the strip temperature (°K), l and m constants, n_1 an exponent dependent upon the reduction, n_2 an exponent dependent upon the strain rate, and α an exponent dependent upon the temperature (°K); determining the exit strip temperature T_{EX} (°K) in accordance with an equation

$$T_{EX} = T_{EN} + \frac{1-\frac{r}{4}}{1-\frac{r}{2}}\cdot\frac{Km\cdot\ln\left(\frac{1}{1-r}\right)}{\rho\,S\,J}$$

where T_{EN} represents the entrance strip temperature, r the reduction, ρ the density (Kg/mm_3) of the material being rolled, S the specific heat (K cal/Kg °C) of the material, J the work equivalent of heat (Kg.mm/K cal), Km the mean deformation resistance, and l and m constants; determining the mean deformation resistance K_m in accordance with the following equations

$$K_m = 1.15.l\,(\bar{r}_m+m)^{n_1}\cdot 1.\epsilon^{n_2}2\,\exp\,(\alpha/\bar{T}_m)$$
$$\bar{r}_m = \beta_1\,\bar{r}_{EN} + (1-\beta_1)\,\bar{r}_{EX}$$
$$\bar{T}_m = \beta_2\,T_{EN} + (1-\beta_2)\,T_{EX}$$

where L, m, n_1, n_2, ϵ, T_{EN}, T_{EX} and α have the meanings as defined for the equations for K_f and T_{EX}, β_1 represents the distribution coefficient of the reduction, β_2 the distribution coefficient of the temperature, $\bar{r}_m$ the mean total reduction, $\bar{T}_m$ the mean strip temperature (°K), $\bar{r}_{EN}$ the mean total reduction of the strip on the entrance side and $\bar{r}_{EX}$ the total reduction of strip on the exit side; determining the rolling load p (Kg/mm) by substituting the value of Km in an equation

$$p = Z\,.\,K_m\,\sqrt{R'\,.\,\Delta\,h}\,.\,Qp$$

where Z represents a correction term for tension, R' the roll radius (mm) after the roll has been flattened a little by contact with the strip, $\Delta\,h$ the amount of reduction and Qp the reduction function regarding the rolling force; determining the roll gap S_o (mm) by substituting the value of p in an equation

$$S_o = h - \frac{b\cdot p}{M}$$

where h represents the thickness of the strip on the exit side, b the width of the strip, and M the mill constant (Kg/mm); and adjusting the roll gap in accordance with the value of S_o thus determined.

3,940,599

DATA PROCESSING ARRANGEMENTS

Godfrey Newbold Hounsfield, Newark; Paul Anthony Beaven, Langley, and Brian Herbert Lill, Flackwell Heath, all of England, assignors to E M I Limited, Hayes, England

Filed May 23, 1974, Ser. No. 472,872
Claims priority, application United Kingdom, May 23, 1973, 24773/73
Int. Cl.² G06F 15/34
U.S. Cl. 235—151.3 8 Claims

1. A data processing arrangement including

a. first storage means for storing electrical signals indicative of the value of a function at each of a plurality of different spatial locations of a region,

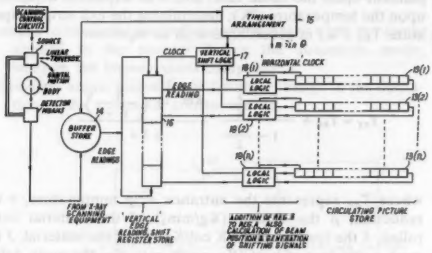
b. second storage means for storing electrical signals indicative of the overall value of the function over linear combinations of some of said locations,

c. means for correlating the information stored in said first and second storage means, to update the signals stored in said first storage means which relate to the locations of said combinations, comprising

i. means for shifting the information stored in each of said storage means at respective rates,

ii. means for controlling said rates in dependence upon the disposition of said linear combinations of elements with respect to said region and

iii. means for combining some of the information stored in said first and second storage means, and



d. means for replacing the signals in said second storage means with other signals indicative of a further overall value of the function over further linear combinations of some of said locations so that the signals in said first storage means may be further updated.

3,940,600

METHOD AND APPARATUS FOR ON-LINE NON-INTERACTIVE BLENDING USING AN UNCOUPLING MATRIX

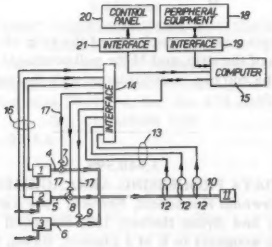
Michael Richard Alexander; Edward Duncan; Kenneth McClements, and John Roger Spencer, all of London, England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 26, 1974, Ser. No. 454,925

Claims priority, application United Kingdom, Apr. 4, 1973, 16057/73

Int. Cl.[2] G06F *15/46;* **G06G** *7/58*

U.S. Cl. 235—151.12 **12 Claims**



1. A method of non-interactive blending, comprising the steps of:

monitoring a plurality of qualities of a blended product on line;

producing electrical signals representative of the selected qualities;

feeding the electrical signals to a control means;

operating on the electrical signals in the control means with an uncoupling matrix, which is an inversion of a matrix representing linear property indices of components of the blend, to produce output control signals;

feeding the output control signals to valve means, which respectively control the flow of each of the components of the blend, to simultaneously control the flow of all of the components to correct for any deviation without causing deviations of other qualities of the blended product.

3,940,601

APPARATUS FOR LOCATING FAULTS IN A WORKING STORAGE

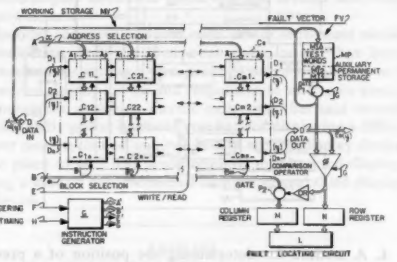
Michel Henry, and Gilles Jean Marcel Bottard, both of 94 Avenue Gambetta, Paris (20), France

Filed Aug. 30, 1974, Ser. No. 502,165

Claims priority, application France, Sept. 5, 1973, 73.32062

Int. Cl.[2] G06F *11/00;* **G11C** *29/00*

U.S. Cl. 235—153 AC **8 Claims**



1. In a data processing system including a working storage consisting essentially in a plurality of identical components each having several selectively addressable store cells at which at least one bit of a data can be stored, said components being arranged in a matrix array wherein each column constitutes a block capable of storing several data words at respective addresses and wherein each row corresponds to at least one and the same bit position of said words, said working storage being further provided with circuit means operative for selectively writing or reading a data word at any predetermined address of any one of said blocks, a method for locating faults in said working storage, which comprises the preliminary step of determining a sequence of at least three test words each having as many bits as a data word and between which both logic states are distributed so that each bit presents each state at least once in said sequence, and which further comprises the operating steps of:

— writing repetitively said sequence of test words at successive addresses of a first one of said blocks until all addresses thereof are filled, then reading out successively the content of each address of said first block and comparing same to that test word previously written at the said address, and whether any corresponding bits thereof differ, determining the position of said differing bits and registering the row of the involved defective component;

— then repeating for said first block the aforesaid operating step with cyclic permutation of said test words in said sequence up to their initial ranking, to thereby register the rows of every defective components in said first block, and further registering together the relevant column;

— and thereafter repeating the aforesaid steps for each block of said working storage, to thereby list every defective component thereof, each one being identified by the row and column to which it pertains.

3,940,602

SIGNAL PROCESSING IMAGER ARRAY USING CHARGE TRANSFER CONCEPTS

Isaac Lagnado, and Harper J. Whitehouse, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 23, 1974, Ser. No. 508,472

Int. Cl.[2] G06G *7/19;* **H01L** *31/00*

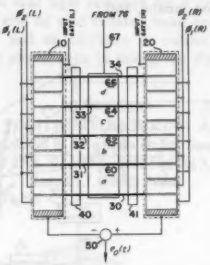
U.S. Cl. 235—181 **9 Claims**

1. An apparatus for image sensing and mathematical transformation comprising:

an array of optical sensors for sensing an image and storing a series of charge signals representative of said image;

first and second CCD shift registers, each said CCD shift register comprising a plurality of bits;

first and second distinct independently controlled transfer gate means for controlling the transfer of said charge



signals from said array of optical sensors to said first and second CCD shift registers;

a plurality of diffusion stops arranged to permit the transfer of each charge signal of said series of charge signals from each element of said array of optical sensors to one of said plurality of bits in either of said first and second CCD shift registers.

3,940,603

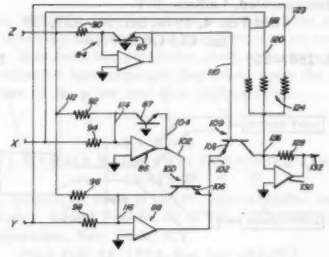
FOUR QUADRANT MULTIPLYING DIVIDER USING THREE LOG CIRCUITS

John I. Smith, 4505 Ellicott St., Washington, D.C. 20016

Filed July 2, 1974, Ser. No. 485,098

Int. Cl.² G06G 7/16

U.S. Cl. 235—195 **19 Claims**



1. An analog multiplying divider for three input variables x, y and z, the multiplying divider comprising:

first circuit means for performing a log transfer operation upon the variable z;

second circuit means for performing a log transfer operation upon at least the variable x;

third circuit means for performing a log transfer operation upon at least the variable y;

the third circuit means including first means for summing at least log y and the log x output from the second circuit means to form a summation signal which is a function of $\log x + \log y$;

second summing means having inputs thereof connected to the output of the first circuit means and the third circuit means for producing the antilog $(\log x + \log y - \log z)$; and

output means connected to the output of the second summing means for producing $(xy)/z$ at the output thereof.

3,940,604

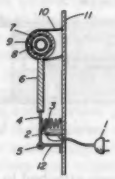
DEVICE FOR EMERGENCY LIGHTING

Michael McKay Rauhut, Bridgewater Township, Somerville County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 12, 1973, Ser. No. 423,949

Int. Cl.² F21V 9/16

U.S. Cl. 240—2.25 **9 Claims**



1. A device for displaying emergency lighting comprising a base plate, an extension plate extending vertically from and affixed at one end to said base plate, pivot means attached to the other end of said extension plate, a metallic plate affixed at one end by said pivot means to said extension plate to allow said metallic plate to swing about said pivot means, an elongated rigid rod affixed at one end to the other end of said metallic plate opposite said pivot means, clamping means affixed to the other end of said elongated rigid rod, bias means affixed at one end to said base plate and positioned on said base plate to contact said metallic plate when said metallic plate is pivoted about said pivot means to aligned said rigid rod substantially parallel with said base plate, an electromagnetic force means affixed at one end to said base plate adjacent said bias means and disposed to contact said metallic plate when said metallic plate is pivoted about said pivot means to align said elongated rigid rod substantially parallel to said base plate, electrical power means connected to said electromagnetic force means to create an electromagnetic force so that when said metallic plate contacts said electromagnetic force means the bias means is compressed, a chemiluminescent light device comprising at least two elongated containers each container sealed on both ends and each containing a chemical component of a multicomponent chemiluminescent system, said containers comprising a translucent outer container and at least one rigid frangible inner container located within said outer container, said outer container held in the center by said clamping means, a pair of restraining means loosely encompassing each end of said outer container and affixed to said base plate so that when the electrical power fails the compressed bias means will press against said metallic plate bending said flexible outer container sufficiently to break the inner frangible container and cause the chemical components to become admixed after the ends of the outer container slip free of said restraining means to display the chemical lighting device in a position vertical to said base plate.

3,940,605

CHEMILUMINESCENT MARKER APPARATUS

Robert L. Gerber, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1974, Ser. No. 533,905

Int. Cl.² F21V 9/16

U.S. Cl. 240—2.25 **6 Claims**

1. A chemiluminescent light apparatus for generating an illuminated marker comprising:

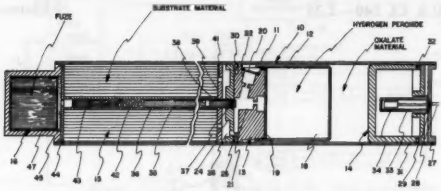
a tubular housing;

mixing means rigidly mounted within said tubular housing;

first and second fluid compartments within said tubular housing having frangible means separating said fluid compartments from said mixing means and adapted to

deliver fluid to said mixing means upon rupture of said frangible means;

gas generator means having an explosive actuator for releasing a predetermined quantity of gas to cause a force to be exerted on said first and said second fluid compartments for rupturing said frangible means; and



light transmittable means attached to said mixing means for receiving and storing the mixed fluids;

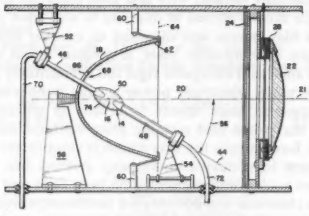
whereby the light given off from the chemical action of the mixed fluid forms a means of illumination of a given area.

3,940,606

HIGH INTENSITY SPOTLIGHT

Thomas M. Lemons, Marblehead, Mass., assignor to Lighting Development Co., Needham Heights, Mass.

Filed July 19, 1974, Ser. No. 490,052
Int. Cl.² F21M 7/00
U.S. Cl. 240—41 R **7 Claims**



1. A light projecting apparatus comprising a concave, substantially prolate-spheroidal reflector having on the major axis thereof a first and a second focal point within and remote from the reflector respectively, a high intensity halide source positioned at said first focal point, the source having a opposed electrodes defining a source axis which is inclined with respect to said major axis at an angle between 25° and 35°.

3,940,607

PHOTO-ELECTRIC LIGHTNING DETECTOR APPARATUS

Edmund Philip Krider, Tucson, Ariz., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1974, Ser. No. 531,010
Int. Cl.² H01J 39/12
U.S. Cl. 250—209 **3 Claims**

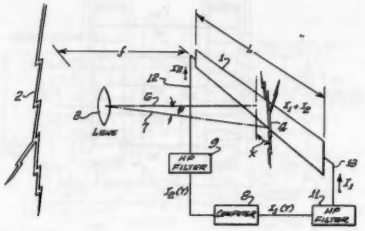
1. Photoelectric apparatus for monitoring the occurrence of a lightning discharge in the vicinity of a particular objective comprising:

a continuous linear single-axis position-sensing photodiode detector means of a length L deployed a predetermined distance from said objective;

an optical objective lens having a predetermined field of view for imaging a lightning discharge occuring within its view as a focused narrow-line channel bisecting said length L at varying locations dependent upon the location of the lightning discharge; said detector means being formed for producing two signal outputs each corresponding in magnitude to said variable location of said bisecting channel;

said lens and detector means each being relatively disposed one to the other and both being oriented relative to said objective for focusing said field of view on said detector means;

data acquisition means, and



circuit means coupling said two detector means outputs to said acquisition means, said circuit means including background filtering means for passing to said acquisition means signal information substantially wholly representative of the optical transients of the lightning discharge,

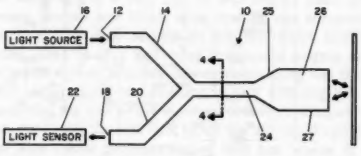
said acquisition means being responsive to said filtered information for providing angle to discharge data whereby precise information regarding the proximity of said discharge to said objective and its intensity is provided.

3,940,608

FIBER OPTIC DISPLACEMENT MEASURING APPARATUS

Curtis D. Kissinger, Gloversville, N.Y., and Bradford Howland, Cambridge, Mass., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,339
Int. Cl.² G02B 5/16
U.S. Cl. 250—227 **11 Claims**



1. Optical apparatus for determining the displacement or position of an object comprising:

a. A light source and a light receiver for receiving light transmitted from said light source;

b. A fiber optic conduit of Y-shaped configuration having the end of one arm thereof positioned adjacent said light source and the other arm positioned adjacent said light receiver, said conduit arms forming a common bundle of optically conducting fibers in the base of said Y, some of which fibers are transmitting fibers for conducting light from said light source to a surface of said object and some of which are receiving fibers for conducting light reflected from the surface of said object to said light receiver so that said conduit is normally operative to conduct light from said light source and to conduct reflected light impinging on the end face of said common bundle to said light receiver; and

c. A sensing head having one end thereof fixedly mounted with the end of said common bundle and the other end adapted to be positioned adjacent the surface whose

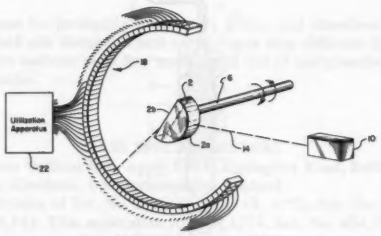
displacement or position is to be measured, said sensing head including lens means comprising a pair of projection lenses arranged in back-to-back relationship and operative to focus the image of the end face of said common bundle onto the surface of said object and refocus said image back onto said end face to provide for a minimum output from said light receiver for a given distance between said end of said sensing head and the surface of said object and an increase in output from said light receiver for any change in said given distance.

3,940,609

ANGULAR POSITION MEASURING APPARATUS

Dick E. Johnstun, 1355 E. Granada Drive, Sandy, Utah 84070

Filed Oct. 9, 1974, Ser. No. 513,218
Int. Cl.² G01D *5/34*
U.S. Cl. 250—231 SE **9 Claims**



1. Apparatus for indicating angular position of a rotatable device comprising

a prism coupled to the device to rotate therewith,

means disposed laterally of the axis of rotation of the device for directing a beam of light to said prism, said beam passing through the prism and being refracted thereby, and

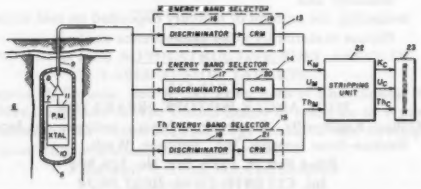
an array of photo detectors positioned about the prism so that the refracted beam of light will impinge on one of the photo detectors, the particular photo detector on which the refracted light impinges depending upon the angular position of the prism and thus of the device.

3,940,610

NATURAL GAMMA RADIATION BOREHOLE LOGGING SYSTEM

Charles L. Dennis, De Soto; Wyatt W. Givens, Dallas, and John B. Hickman, Grand Prairie, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 15, 1974, Ser. No. 443,073
Int. Cl.² G01V *5/00;* **G01T** *1/20*
U.S. Cl. 250—253 **7 Claims**



1. In a system for determining the amounts of natural gamma radiation from potassium, uranium, and thorium in the earth formations and having a gamma-ray detector which provides an output representative of the total natural gamma radiation and three energy band selectors which discriminate the count rate output of the gamma-ray detector into potassium, uranium, and thorium energy band signals centered, respectively, about the energy levels at which potassium, uranium, and thorium exhibit peak gamma radiation intensities, the improvement comprising:

a. first means for producing the fraction of the count rate in the thorium energy band signal that represents the contribution of thorium gamma radiation to the total count rate of the uranium energy band signal,

b. second means for subtracting said fraction of the count rate of the thorium energy band signal from said total count rate of the uranium energy band signal,

c. third means for producing the fraction of the count rates in the uranium and thorium energy band signals that respectively represent the contributions of uranium gamma radiation and thorium gamma radiation to the total count rate of the potassium energy band signal, and

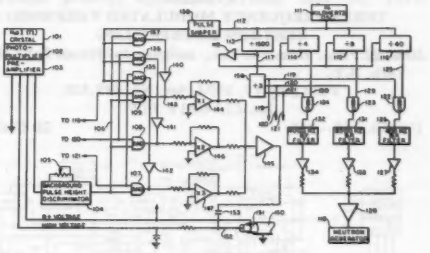
d. fourth means for subtracting said fractions of the count rates of the thorium and uranium energy band signals from said total count rate of the potassium energy band signal.

3,940,611

METHOD FOR DETERMINING THERMAL NEUTRON DECAY TIMES OF EARTH FORMATIONS

Dan M. Arnold, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 17, 1974, Ser. No. 489,329
Int. Cl.² G01V *5/00*
U.S. Cl. 250—269 **8 Claims**



1. A method for determining the thermal neutron decay time of materials in the vicinity of a well borehole comprising the steps of:

continuously irradiating the earth formations in the vicinity of a well borehole with a phase coherent harmonically intensity modulated cloud of fast neutrons at first, second and third different modulations frequencies;

detecting as a function of time the intensity modulated thermal neutron population resulting from said irradiation at said at least three different modulation frequencies;

determining from said detected thermal neutron populations measured as a function of time, the tangents of the relative phase shift angles between said fast neutron cloud and said thermal neutron population at each of said first, second and third modulation frequencies;

combining said first and second phase angle tangents to derive a first approximation to the thermal neutron decay time of earth formations in the vicinity of a well borehole;

combining said first and third phase angle tangents to derive a second approximation to the thermal neutron decay time of earth formations in the vicinity of a well borehole; and

combining said first and second approximations of the thermal neutron decay time according to a predetermined relationship to derive a value for the true thermal neutron decay time of the earth formations in the vicinity of a well borehole.

3,940,612

METHOD FOR DETECTING AND LOCATING WATER-PRODUCING ZONES AND/OR WATER THIEF ZONES IN SUBTERRANEAN FORMATIONS

Derry D. Sparlin; Walter H. Fertl, both of Ponca City, Okla., and Gary C. Young, Pinole, Calif., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 4, 1974, Ser. No. 512,831
Int. Cl.[2] G01V 5/00
U.S. Cl. 250—260 12 Claims

1. A method for detecting and locating water-producing zones in a subterranean formation penetrated by a well bore which comprises:

a. injecting into said formation an aqueous solution containing from about 0.01 to 7.5 weight percent of an irradiated water soluble compound selected from the group consisting of sodium silicate, water-soluble polymers, and polysaccharides produced by bacteria of the genus Xanthomonas on carbohydrates, said compound having preferential silica adsorptive characteristics;

b. passing said radioactivity detection means through the well bore and recording the measurement of radioactivity;

c. returning the reservoir to normal production;

d. passing said radioactivity detection means through the well bore and recording the measurement of radioactivity of said formation; and,

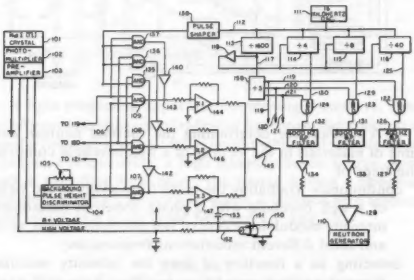
e. comparing the measurements of radioactivity to determine water producing zones.

3,940,613

THREE FREQUENCY MODULATED THERMAL NEUTRON LIFETIME LOG

Hans J. Paap, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 17, 1974, Ser. No. 489,330
Int. Cl.[2] G01V 5/00
U.S. Cl. 250—269 20 Claims



1. A method for determining the thermal neutron decay time of earth formations in the vicinity of a well borehole comprising the steps of:

continuously irradiating the earth formations in the vicinity of a well borehole with a phase coherent harmonically intensity modulated cloud of fast neutrons having at least three different frequency modulation components;

detecting as a function of time the intensity modulated thermal neutron population resulting from said irradiation at said at least three different modulation frequencies;

determining from said detected thermal neutron populations measured as a function of time, the relative phase shift between said fast neutron cloud and said thermal neutron population at said at least three different modulation frequencies; and

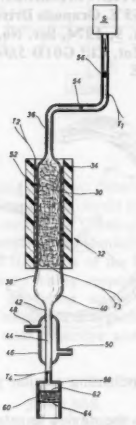
combining said three different modulation frequency relative phase shift measurements according to a predetermined relationship to derive an indication of the thermal neutron decay time of the earth formations in the vicinity of a well borehole.

3,940,614

METHOD AND APPARATUS FOR COLLECTION AND ANALYSIS OF MERCURY IN THE ATMOSPHERE

John R. Rhodes, Austin; David H. Weinstein, Brookshire, and Andrzej H. Pradzynski, Austin, all of Tex., assignors to Columbia Scientific Industries Corporation, Austin, Tex.

Filed Jan. 21, 1974, Ser. No. 434,774
Int. Cl. G01n 23/00
U.S. Cl. 250—273 13 Claims



1. A method of detecting and measuring the concentration of mercury vapor in the atmosphere, comprising the steps of:

forcing a measured volume of air containing an unknown concentration of mercury vapor through a first fibrous material coated with a noble metal, for a predetermined period of time, to produce a first mercury amalgam of said noble metal on the surface of said first fibrous material;

heating said first fibrous material so as to vaporize the mercury deposited thereon;

passing a carrier gas through said first fibrous material to transport said vaporized mercury from the surface thereof;

passing said carrier gas containing the vaporized mercury through a second fibrous material also coated with a noble metal;

cooling said carrier gas immediately prior to passing it through said second fibrous material, to produce a second mercury amalgam on the surface of said second fibrous material; and

measuring the amount of mercury deposited on said second fibrous material by x-ray fluorescence analysis.

3,940,615

WIDE ANGLE ISOTOPE SEPARATOR

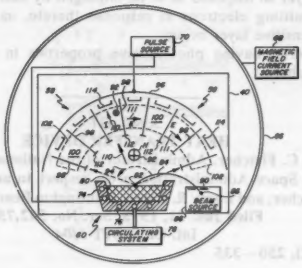
Arthur Kantrowitz, Cambridge, Mass., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Feb. 2, 1973, Ser. No. 328,955
Int. Cl.[2] B01D 59/44; H01J 39/34
U.S. Cl. 250—284 31 Claims

1. In a system for separating one isotope from an environment containing plural isotopes which are in a vapor state and wherein there is a generally radial vapor flow to the vapor with substantial local flow uniformity, apparatus comprising:

a plurality of adjacent chambers for collecting vapor components and defined by a plurality of plates between

chambers, the plates being positioned parallel to the vapor flow generally to permit passage of said radial vapor flow through said chambers; and



means for producing a trajectory within said chambers for said one isotope in said radial vapor flow different from the uniform local flow and toward one of said plurality of plates.

3,940,616

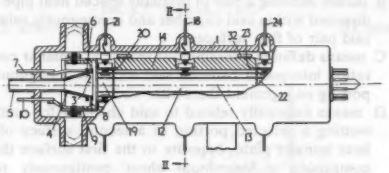
MASS SPECTROMETERS

Geoffrey William Ball, Apple Patch, Bellingdon Road, Bellingdon, Chesham, Buckinghamshire, England

Division of Ser. No. 217,600, Jan. 13, 1972, Pat. No. 3,840,742. This application Aug. 2, 1974, Ser. No. 494,278

Int. Cl.[2] H01J *39/34, 37/08*

U.S. Cl. 250—292 **2 Claims**



1. A mass spectrometer comprising an ion source, an ion filter and an ion detector, the ion source including two nested frusto-conical members, the inner member being in mesh form, the wider end of the inner frusto-conical member being adjacent the entry to the ion filter, a member containing a passage for introducing a gas to be ionized, said passage member being connected to the narrower end of the inner frusto-conical member, a source of r.f., the output of which is applied between the frusto-conical members, and a source of d.c., the output of which is applied between the frusto-conical members.

3,940,617

METHOD FOR NONDESTRUCTIVE FUEL ASSAY OF LASER FUSION TARGETS

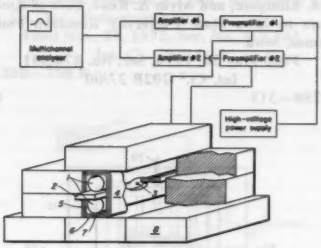
Eugene H. Farnum, and R. Jay Fries, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 7, 1975, Ser. No. 565,932

Int. Cl.[2] G01T *1/61*

U.S. Cl. 250—303 **4 Claims**

1. A method of nondestructively determining the deuterium and tritium contents of laser fusion target microballoons which comprises (a) counting the x rays produced by the interaction of tritium beta particles with the walls of said microballoons, (b) comparing the number of counts for a designated period of time with a calibration curve of counts for various tritium contents for the same designated time



period to obtain the tritium content, and (c) calculating the deuterium content utilizing the known initial D-T ratio and the known diffusion rates for D and T.

3,940,618

SAMPLING DEVICE FOR THE ANALYSIS OF A FLUID

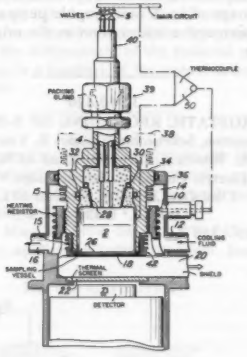
René Donguy, Verrieres le Buisson, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed May 15, 1974, Ser. No. 470,113

Claims priority, application France, May 21, 1973, 73.18377

Int. Cl.[2] G01N *21/24, 31/00*

U.S. Cl. 250—304 **13 Claims**



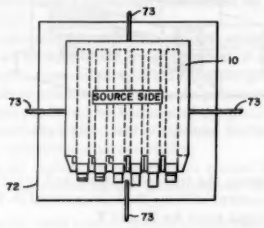
1. A method of sampling fluid circulating in a main circuit, said method comprising the steps of withdrawing a sample of said fluid from said main circuit and introducing said sample into a cavity which is heated in order to bring the conditions of temperature and pressure of the fluid within the cavity to the same values as in the main circuit, allowing said fluid to thermally stabilize, isolating said cavity from said main circuit after thermal stabilization, cooling said sampling unit after isolation, reducing the thickness of one of the walls defining said cavity to a thin window, and analyzing the fluid across said window.

3,940,619

METHOD FOR PRODUCING THREE-DIMENSIONAL REAL IMAGE USING RADIOGRAPHIC PERSPECTIVE VIEWS OF AN OBJECT

William A. Ellingson, and Alvin A. Read, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 30, 1974, Ser. No. 474,591
Int. Cl.² G02B 27/00
U.S. Cl. 250—313 4 Claims



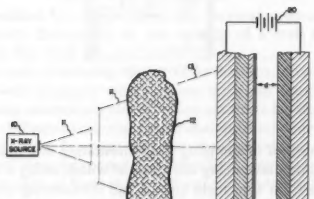
1. In a method of reconstructing a three-dimensional real image of an object, including preparing a plurality of radiographic images of said object, each from a different perspective, the improvement comprising: generating a reference beam of coherent light; generating an object beam of coherent light; passing said object beam of coherent light through ray back-tracing lens means and through said radiographic images to converge the same at a point on a path corresponding to the original path of rays used in irradiating said object with a source of penetrating radiation; illuminating a radiographic perspective with said converging object beam; and intercepting said converging object beam and said reference beam with a section of holographic recording medium between said path and said radiographic perspective for each of said radiographic perspectives, to thereby form a holographically-recorded image of each radiographic perspective containing the same perspective information in the original radiograph perspective.

3,940,620

ELECTROSTATIC RECORDING OF X-RAY IMAGES

John M. Houston, Schenectady; James R. Young, Rexford, and Nathan R. Whetten, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1974, Ser. No. 511,615
Int. Cl.² G03B 41/16
U.S. Cl. 250—315 A 11 Claims



11. An electrode comprising:

a. a first layer of a fluorescent material capable of emitting photons substantially in the ultraviolet spectral region by the action of X-rays impinging thereupon; and

b. a second ultraviolet sensitive layer adjacent said first layer so disposed as to be impinged by said photons and emitting electrons in response thereto, said ultraviolet sensitive layer being

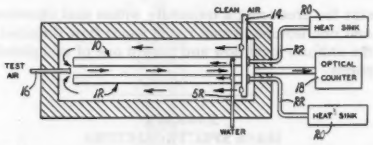
a material having photemissive properties in an oxidizing atmosphere.

3,940,621

HEAT TRANSFER DEVICE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Fletcher, and Larry R. Eaton, Huntington Beach, Calif.

Filed Jan. 21, 1975, Ser. No. 542,754
Int. Cl.² G01T 5/04
U.S. Cl. 250—335 3 Claims



1. In a diffusion cloud chamber, an improved internally supported heat transfer device comprising:

A. means including a pair of mutually spaced heat transfer plates, each being of a planar configuration, having a pair of opposed first surfaces defining therebetween a heat pipe chamber;

B. means defining a pair of mutually spaced heat pipe wicks disposed within said chamber and contiguously related to said pair of first surfaces;

C. means defining a foraminous spacer of a planar configuration interposed between said wicks in contiguous supporting engagement therewith; and

D. means externally related to said chamber for uniformly wetting a selected portion of a second surface of each heat transfer plate, opposite to the first surface thereof, comprising a foraminous sheet contiguously related thereto.

3,940,622

ICING DETECTOR

James R. Stallabrass; T. Rayman Ringer; Donald L. Bailey, all of Ottawa, and Patrick F. Hearty, Hull, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 397,689, Sept. 17, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,535
Claims priority, application Canada, Oct. 23, 1972, 154432
Int. Cl.² G01J 1/00
U.S. Cl. 250—338 20 Claims

1. An icing detector, for detecting the presence in the atmosphere of supercooled droplets, comprising:

a. a duct member having an annular plenum formed in one end thereof;

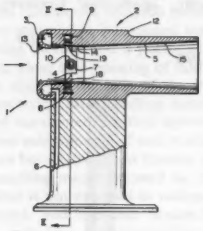
b. means for supplying pressurized gas to said plenum;

c. primary jet outlet means communicating with said plenum, said primary jet outlet means being disposed within the duct to induce secondary ambient air flow through the duct;

d. a probe mounted within said duct member so that supercooled water droplets suspended in the induced secondary ambient air flow impinge on said probe and form ice thereon; and

e. sensing means for detecting the presence of ice on said probe comprising an emitter for emitting radiation that is

attenuated by ice and a radiation sensor, said emitter and sensor being mounted in the duct member so that ice



formed on the probe occludes the radiation from the emitter to the sensor.

3,940,623

APPARATUS FOR MEASURING THE PROPORTION OR QUANTITY OF A COMPONENT IN A RADIATION-TRANSPARENT MIXTURE

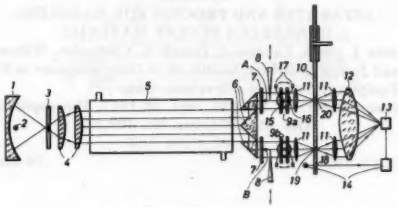
Günter Hempowitz, and Jochen Pokar, both of Julich, Germany, assignors to Uranit, Uran-Isotopentrennungs-Gesellschaft m.b.H., Julich, Germany

Filed Oct. 7, 1974, Ser. No. 512,866

Claims priority, application Germany, Oct. 5, 1973, 2350004

Int. Cl.² G01M 21/26

U.S. Cl. 250—343 **2 Claims**



1. In an apparatus for measuring the proportion or quantity of a component of a radiation transparent mixture by discrete radiation absorption, including means for passing a beam through the mixture; beam splitting means disposed downstream of the mixture with respect to the travelling direction of the beam for splitting the beam into a measuring beam and a reference beam; a first narrow-band interference filter arranged in the path of the measuring beam; a second narrow-band interference filter arranged in the path of the reference beam; means disposed downstream of the filters for separately detecting the radiation intensities of the measuring beam and the reference beam; and means for forming the difference between the two radiation intensities, the difference between the two radiation intensities being a function of the proportion and quantity of the component; the improvement wherein said first filter has a transmitting wavelength slightly above the discrete absorption wavelength of the component for a perpendicular penetration of radiation and said second filter has a transmitting wavelength outside the absorption spectrum of the component; further comprising means for oscillating said filters in phase in a range of oscillation in which said first filter traverses the absorption maximum.

3,940,624

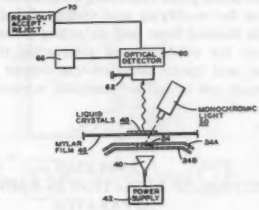
APPARATUS AND A METHOD FOR TESTING THE INTEGRITY OF A WELD

Eugene C. Simmons, Woodbury, Conn., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Nov. 29, 1972, Ser. No. 310,485

Int. Cl. G01t 1/16

U.S. Cl. 250—358 R **6 Claims**



1. The method of testing the structural integrity of a composite weld between two metal plates used as a terminal element and closure for a battery which comprises the steps of:

1. placing a material adjacent to and in contact with a first side of the weld spot area of the test specimen, the refractive index of said material measurably varying in response to varying temperatures transmitted thereto from the test specimen, the temperature transmitted being a function of the density of the weld between the two metal plates;
2. directing an incident beam of monochromatic light on a first side of said material of step (1), said beam of light emitted from a source positioned adjacent said material of step (1);
3. heating the test specimen by subjecting the second side thereof to a beam of infrared energy;
4. determining the integrity of the weld by measuring the degree of refraction of the reflected, refracted beam of monochromatic light by means of a detector device, the degree of refraction of said incident light beam being a function of the temperature of the material of step (1), which in turn is a function of the output temperature of the spot weld.

3,940,625

APPARATUS FOR EXAMINING OBJECTS BY MEANS OF PENETRATING RADIATION

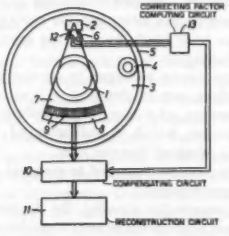
Godfrey Newbold Hounsfield, Newark, England, assignor to E M I Limited, Hayes, England

Filed May 30, 1974, Ser. No. 474,767

Claims priority, application United Kingdom, June 1, 1973, 26325/73

Int. Cl.² G01N 23/02

U.S. Cl. 250—360 **7 Claims**



1. Apparatus for examining an object by means of penetrating radiation including,

1. means for generating radiation emitted in many directions,
2. means for collimating said radiation to produce a substantially planar, fan-shaped swath of said radiation,
3. detecting means, disposed between the generating means and the object, for monitoring the intensity of the radiation at spaced positions across the width of the swath,
4. means for deriving output signals representative of the transmission of said radiation along a plurality of laterally spaced beam paths extending longitudinally of the swath,
5. means for modifying said output signals in response to signals derived from said detecting means and
6. means for orbiting said generating means, detecting means and means for deriving output signals about a common axis in and substantially normal to the plane of the swath.

3,940,626

DETECTION OF RADIATION IN RADIOGRAPHIC APPARATUS

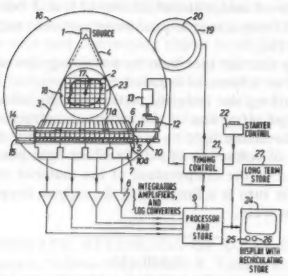
Godfrey Newbold Hounsfield, Newark, England, assignor to E M I Limited, Hayes, England

Filed Apr. 24, 1974, Ser. No. 463,829

Claims priority, application United Kingdom, May 5, 1973, 21525/73

Int. Cl.² G01T *1/20*

U.S. Cl. 250—366 **8 Claims**



1. Radiographic apparatus for examining a body by means of radiation such as X- or γ-radiation including,

a. a source of said radiation arranged to irradiate a substantially planar slice of the body along a plurality of similar sets of rays, each set being directed through said body at a respective angle, or mean angle, with respect thereto

b. detecting means, disposed on the side of the slice remote from the source, for detecting the radiation transmitted through the body along each of the rays; said detecting means including

i. a detector device arranged to receive radiation transmitted along one of the rays of a set and to provide output energy, of a wavelength different from that of the radiation, which is indicative of the amount of radiation received thereby and

ii. measuring means arranged to measure the intensity of said output energy,

c. switching means for causing the measuring means to measure said output energy over a predetermined interval of time and

d. means for substantially preventing the radiation being incident on the detector device during the predetermined interval.

3,940,627

SHIELDED-EMITTER NEUTRON DETECTOR

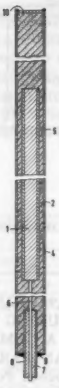
Erich Klar, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 1, 1974, Ser. No. 493,904

Claims priority, application Germany, Aug. 1, 1973, 2339004

Int. Cl.² G01T *3/00*

U.S. Cl. 250—390 **6 Claims**



1. A self-powered neutron detector comprising a neutron-sensitive emitter, a collector enclosing said emitter, and insulation between said emitter and collector; wherein the improvement comprises said emitter being enclosed by a metal which is neutron-insensitive relative to said emitter and means for electrically interconnecting said metal and emitter.

3,940,628

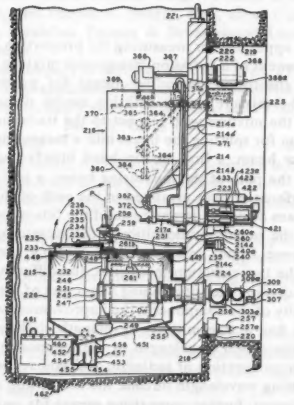
APPARATUS AND PROCESS FOR HANDLING DANGEROUS FLUENT MATERIAL

Arthur J. Stock, Lakewood; Donald E. Christofer, Willowick, and Joseph E. Brinza, Euclid, all of Ohio, assignors to Stock Equipment Company, Cleveland, Ohio

Division of Ser. No. 182,088, Sept. 20, 1971. This application Oct. 25, 1973, Ser. No. 409,372

Int. Cl. C09k *3/00*

U.S. Cl. 250—435 **10 Claims**



1. Apparatus for handling radioactive material comprising a rigid shield wall of material and thickness sufficient to re-

duce substantially harmful passage of radioactivity through said shield wall to a level that is not harmful to human operators; means, supported from one side of said shield wall that is exposed to radioactivity from said radioactive material, for handling radioactive material, said handling means including supporting means for supporting and moving a container adapted to contain radioactive material between a position at which radioactive material is introduced into said container through an opening thereof and a position at which closure means is placed to close said opening of said container, while said container is adjacent the side of the shield wall that is exposed to radioactivity, said handling means also including means at said last mentioned position operable to place closure means to close said opening of said container after radioactive material has been introduced therein; power means for operating said handling means located on the other side of said shield wall that is not exposed to radioactivity from said radioactive material; and movable means for driving said handling means, including said supporting means and said closure-placing means, which movable means extends through said shield wall to operate said supporting means and said closure-placing means from said power means without such harmful passage of radioactivity through said shield wall.

3,940,629
DEVICE FOR CLOSING AND OPENING VACUUM X-RAY FILM HOLDERS

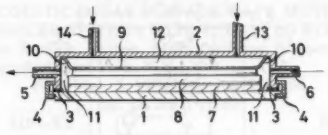
Andreas Schmitzer, Rebenweg 41, Kelheim, Donau, Germany

Filed Mar. 12, 1975, Ser. No. 557,743

Claims priority, application Germany, Mar. 23, 1974, 2414073

Int. Cl.² G03B *41/16*

U.S. Cl. 250—480 **5 Claims**



1. A device for closing and opening vacuum film holders for X-ray films including

a. means defining a chamber for receiving vacuum film holders for X-ray films;

b. a pressure plate arranged inside said chamber and operable from the outside thereof selectively exerting pressure upon, and relieving pressure from, vacuum film holders inside said chamber;

c. flexible partition means having inner ends integral with said pressure plate and having outer ends integral with said chamber-defining means subdividing said chamber into a main compartment and into an auxiliary compartment being tightly separated from each other to preclude any significant flow of air from one compartment to the other;

d. first passageway means for selectively evacuating said main compartment and for admitting air at atmospheric pressure to said main compartment; and

e. second passageway means for selectively evacuating said auxiliary compartment and for admitting air at atmospheric pressure to said auxiliary compartment.

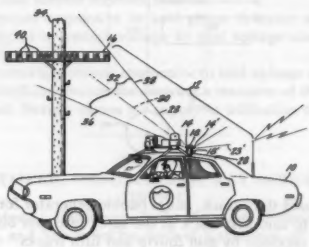
3,940,630
VEHICLE LOCATOR

Francis H. Bergonz, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Oct. 21, 1974, Ser. No. 516,631

Int. Cl.² G08G *1/00*

U.S. Cl. 250—568 **6 Claims**



1. A system for locating at least one movable vehicle at predetermined locations comprising:

a plurality of reflective arrays, each array including a plurality of reflectors in a coded pattern and being located at a predetermined location adjacent a path for the vehicle along which the location of the vehicle is to be determined, each array having a predetermined start code;

a transmitter on the vehicle including means for producing at least one beam of radiant energy at ultraviolet frequencies, said transmitter beam having a vertically oriented fan shape which extends outwardly from the side of the vehicle to impinge and be reflected in accordance with said coded pattern by an array as the vehicle passes along the path; and

a receiver on the vehicle including detector means to detect said coded pattern of reflected radiant energy from an array, said detector means being positioned in a vertical plane with respect to said transmitter beam producing means and including optical means for focusing said reflected radiant energy, filter means which pass only said ultraviolet frequencies, a detector element to convert said filtered radiant energy into electrical signals, means positioned between said detector element and said array to restrict the view of said detector element to one reflector at a time, means connected to said detector means to sense said start code including means to accommodate a predetermined range of bit rates, means to store said array code upon being enabled by said start code sensing means, and means to transmit said array code which indicates the predetermined location of said vehicle.

3,940,631
MAGNETIC BUBBLE LOGIC GATES

Paul T. Bailey, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

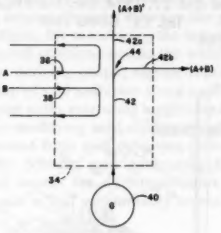
Filed Mar. 13, 1974, Ser. No. 450,875

Int. Cl.² H03K *19/168*; G11C *11/14*

U.S. Cl. 307—88 LC **11 Claims**

1. A magnetic bubble gate comprising means defining a first magnetic bubble propagation track diverging at a point of divergence into downstream second and third magnetic bubble propagation tracks, said propagation tracks comprising means for transmitting a magnetic bubble in said first track through said point of divergence to said second track unless the bubble is repelled by bubble repulsion to said third track at said point of divergence, fourth and fifth magnetic bubble propagation tracks for receiving magnetic bubbles representing binary variables located on the same side of said first, second and third tracks such that said point of divergence lies between said third track on the one hand and said fourth and fifth tracks on the other hand, said fourth and fifth tracks

approaching at least near enough to said point of divergence that simultaneous bubbles on both of said fourth and fifth tracks will repel a simultaneous bubble at said point of divergence to said third track, and a bubble generator for applying a bubble to said first track at the same rate that binary variables are received by said fourth and fifth tracks.

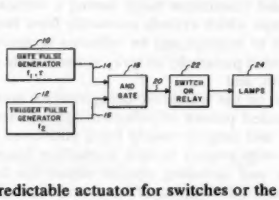


3,940,632

NONPREDICTABLE ACTUATOR FOR SWITCHES OR THE LIKE

Robert Allen Padgug, Williamsville, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Mar. 4, 1974, Ser. No. 447,607
Int. Cl.² H01H 7/00
U.S. Cl. 307—112 **12 Claims**



1. A nonpredictable actuator for switches or the like, comprising;

a. first pulse generating means for producing a first output consisting of a train of pulses at a first frequency,

b. second pulse generating means for producing a second output of short pulses at a second frequency which is much lower than said first frequency, and

c. means responsive to said first and second outputs for generating an actuating signal for lamp circuits or the like only when said first and second output of pulses are coincidental.

3,940,633

GTO TURN-OFF CIRCUIT PROVIDING TURN-OFF GATE CURRENT PULSE PROPORTIONAL TO ANODE CURRENT

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

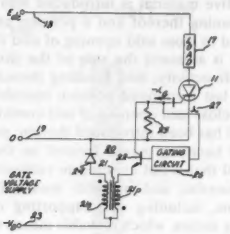
Filed July 1, 1974, Ser. No. 484,613
Int. Cl.² H03K 17/72
U.S. Cl. 307—252 C **5 Claims**

1. A solid state circuit including a semiconductor device with a gate turn-off circuit comprising

a gate turn-off thyristor semiconductor device having an anode and a cathode and a gate terminal for controlling switching of said device between a conducting state in which anode current flows and a nonconducting state, said gate turn-off thyristor being coupled to a pair of unidirectional input voltage supply lines between which is applied an energizing voltage, and

turn-off circuit means for selectively generating a ramped turn-off gate current pulse with a peak magnitude which increases and decreases as said anode current increases and decreases,

said turn-off circuit means being comprised by a transformer having a primary winding connected in series with a controlled solid state switch device between said gate terminal and a negative unidirectional gate voltage supply line, and means for rendering conductive said controlled solid state switch for a selected interval to initiate generation of said gate turn-off current pulse, said transformer having a secondary winding connected in series with a diode and comprising means for returning excess energy stored in said primary winding to a selected voltage supply.

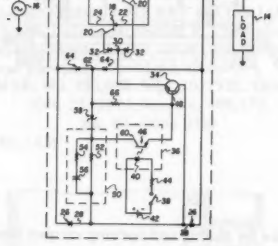


3,940,634

SOLID STATE AC POWER RELAY

Martin L. Grogan, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 14, 1975, Ser. No. 550,062
Int. Cl.² H03K 17/56
U.S. Cl. 307—252 UA **6 Claims**



1. A solid state AC power relay comprising:

bidirectional trigger switching means having two power terminals for passing AC current between an AC load and AC power source when triggered into conduction by a gate current during each AC alternation and a gate terminal for receiving said gate current;

a pair of rectifying diodes, with commonly connected cathodes, connected in series between said power terminals;

an optoelectronic coupler;

a three terminal control element having a controllable current path between two of its terminals for passing said gate current between the AC power source and said gate terminal under the control of an input signal applied to its third terminal, said third terminal being connected to said commonly connected cathodes via the phototransistor of said coupler so that said input signal is enabled to flow therebetween only when the light emitting diode of said coupler is energized, and

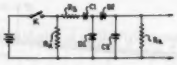
an RC charging circuit connected in series with said phototransistor between its collector and said commonly connected cathodes comprising a resistor in parallel with a series combination of a resistor and capacitor.

3,940,635

SELF-DAMPING CIRCUIT

Albert Meyer, Deer Park, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Aug. 29, 1974, Ser. No. 501,747
Int. Cl.² G10H *1/02*; H03K *17/26*
U.S. Cl. 307—294 **6 Claims**



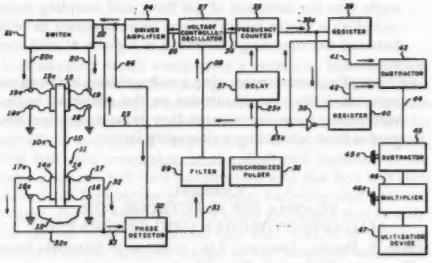
1. A self-decay circuit, including a source of a dc voltage pulse, a resistance (Rk) connected across said source, a series circuit consisting of a first resistance (Rs) and a first capacitance (C1), a first diode (D2) poled to be conductive to said dc voltage pulse, a partial circuit consisting of a second resistance (Ra) and a second capacitance (C2), means connecting said series circuit, said first diode and said parallel circuit all in series in the order stated across said resistance (Rk), and a second diode connected in a series circuit and poled to discharge said first capacitance after termination of said dc voltage pulse, said first diode being poled to be conductive of current in response to said dc voltage pulse, said first and second resistances Rs and Ra being the sole resistances connected in series with said first capacitance (C1).

3,940,636

ACOUSTIC DELAY SURFACE WAVE MOTION TRANSDUCER SYSTEMS WITH ENHANCED STABILITY

Avraham Perahia, Sharon, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 3, 1975, Ser. No. 554,854
Int. Cl. H01I *41/08*
U.S. Cl. 310—8.1 **10 Claims**



1. Transducer means comprising:

flexure means having first and second opposed flexible surface layer means for separately propagating respective first and second acoustic waves along first and second respective predetermined paths therein,

first and second exciter means including switch means for alternately exciting and propagating said respective first and second acoustic waves along said first and second respective predetermined paths in response to respective alternate first and second exciter electric signals,

first and second receiver means along said respective first and second predetermined paths for alternately receiving and converting said respective first and second acoustic waves into respective first and second successive receiver electric signals,

voltage controllable oscillator means for alternately driving said first and second exciter means through said switch means,

phase detector means responsive to said voltage controllable oscillator means and alternately responsive to said first and second receiver means,

filter means responsive to said phase detector means for supply of a control voltage to said voltage controllable oscillator means, and

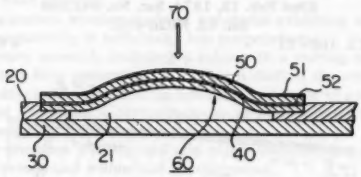
signal processor means responsive to said voltage controllable oscillator means for deriving a measure of the flexure of said flexure means for supply to utilization means.

3,940,637

POLYMERIC PIEZOELECTRIC KEY ACTUATED DEVICE

Hiroji Ohigashi, Kamakura; Reiko Shigenari, Fujisawa; Syozo Ogawa, and Nobuo Sekine, both of Kamakura, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 24, 1974, Ser. No. 463,787
Claims priority, application Japan, Oct. 15, 1973, 48-114708
Int. Cl.² H01L *41/04*
U.S. Cl. 310—8.5 **7 Claims**



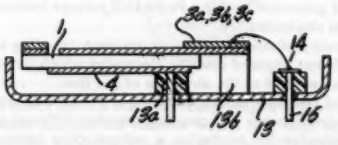
1. A electrically non-contact key input device comprising a piezoelectric polymer film having layer electrodes on both surfaces thereof, and means for straining said film so that said film is extended or contracted along the surface of said film, said straining means defining a key, said straining means comprising a snap action elastic plate with an upwardly convex surface, said film being adhered to said plate in such a manner that said film is contracted along the surface thereof together with said snap action plate upon downward depression.

3,940,638

THIN QUARTZ OSCILLATOR WITH SUPPORT OF LEADS

Toshio Terayama, 4-5-4-406, Nishikoiwa, Edogawa, Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 393,837
Claims priority, application Japan, Sept. 4, 1972, 47-103101
Int. Cl.² H01L *41/04*
U.S. Cl. 310—9.4 **6 Claims**



1. In combination:

a thin quartz substrate having a pair of opposed major surfaces and a longer length than a width thereof, a first metallic layer built-up on a major surface of said substrate and having an extension thereof extending laterally from an end of said substrate in a direction of the longer dimension defining an electrode integral and jointly with said first layer, a second metallic layer overlying said extension and extending over only a part of said first layer reinforcing said extension of said first layer and jointly therewith defining a strengthened electrode and a metallic mass comprising the same composition as said first layer disposed on said major surface spaced from said first layer and at an opposite end of said major surface,

a case having a base plate;

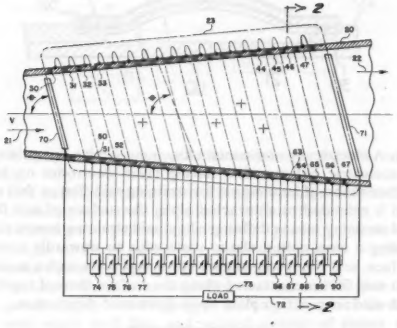
a first support extending from the base plate of said case and having means mounting said substrate thereon at the second major surface of said substrate opposite the first-mentioned major surface; and

a second support extending from the base plate of said case and positioned to support a portion of said extension remote from said substrate.

3,940,639
MHD GENERATOR WITH UNIFORM VOLTAGE DISTRIBUTION

George R. Enos, Concord, N.H.; Richard J. Rosa, Cambridge, and Stanley W. Petty, Boxford, both of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Feb. 15, 1974, Ser. No. 442,800
Int. Cl. H02n *4/02*
U.S. Cl. 310—11 **4 Claims**



1. An MHD generator for generating electricity from a moving stream of electrically conductive gas comprising:

a duct for conveying the gas stream, the duct having an inlet and an outlet,

means for establishing a magnetic field through said duct normal to the direction of gas flow,

terminal electrodes positioned along the duct at the inlet and outlet,

a plurality of discrete electrodes positioned at intervals along opposing walls of the duct,

certain of said discrete electrodes being directly opposed and lying in planes normal to the direction of gas flow, said generator having a rated Hall voltage between adjacent electrodes,

a plurality of first coupling means each coupling together different opposed discrete electrodes which lie in planes at an angle θ to the direction of gas flow,

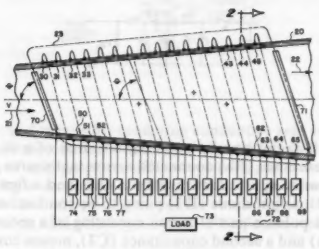
second coupling means including a power transistor connected between and coupling together different adjacent electrodes for producing a voltage drop between said connected adjacent discrete electrodes sufficient to prevent damaging electrical differentials between said adjacent discrete electrodes, and

a control circuit for controlling the current flow through said transistor in response to the voltage across said transistor.

3,940,640
MHD GENERATOR WITH UNIFORM CURRENT DISTRIBUTION

Stanley W. Petty, Boxford; Richard J. Rosa, Cambridge, both of Mass., and George R. Enos, Concord, N.H., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Feb. 15, 1974, Ser. No. 442,802
Int. Cl. H02n *4/02*
U.S. Cl. 310—11 **8 Claims**



1. An MHD generator for generating electricity from a moving stream of electrically conductive gas comprising,

a duct for conveying the gas stream, the duct having an inlet and an outlet,

means for establishing a magnetic field through said duct normal to the direction of gas flow,

terminal electrodes positioned along the duct at the inlet and outlet,

a plurality of discrete electrodes positioned at intervals along opposing walls of the duct,

certain of said discrete electrodes being directly opposed and lying in planes normal to the direction of gas flow, said generator having a rated Hall voltage between adjacent electrodes,

a plurality of coupling means each coupling together different opposed discrete electrodes which lie in planes at an angle θ to the direction of gas flow, said coupling means including a power transistor and current sensor in series between the opposing electrodes in a plane at said angle θ,

said coupling means producing a voltage drop between said connected discrete electrodes in the plane at angle θ sufficient to prevent current flow in said opposed electrodes from exceeding a damaging limit.

3,940,641
PLASMA JET ELECTRODE FOR MAGNETOHYDRODYNAMIC GENERATORS

Milton T. Dooley, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

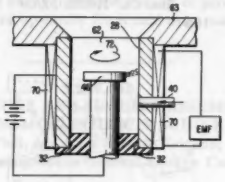
Filed Apr. 5, 1974, Ser. No. 458,341
Int. Cl.² H02K *45/00*
U.S. Cl. 310—11 **26 Claims**

1. An MHD system having an anode assembly, a cathode assembly, duct means for passing a plasma stream therebetween, means for passing a magnetic flux across said duct means, and circuit means connecting said anode and cathode assembly, said system further comprising:

a collector of said anode assembly connected to said circuit means and having an opening therethrough for communication with said duct means;

an emitter of said anode assembly located adjacent said collector;

means to pass an ionizable gas between said collector and emitter; and



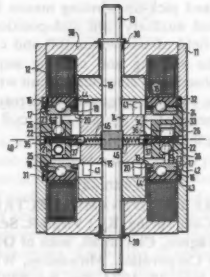
means for maintaining said collector positive relative to said emitter.

3,940,642

STEPPING MOTOR

Karl Glaser, 7021 Stetten, Filder, Germany

Filed Nov. 7, 1974, Ser. No. 521,909
Int. Cl.² H02K 7/06
U.S. Cl. 310—20 16 Claims



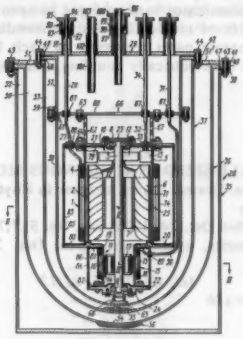
1. A stepping motor comprising a casing, at least one electromagnet disposed in the casing, a shaft which is mounted for rotation in the casing, a rotor fixed to the shaft, an armature rotationally fastened to the rotor and mounted on the shaft for longitudinal sliding and cooperating with the electromagnet, a first ball race concentric to the shaft and fastened to the casing, a second ball race cooperating with the first ball race and mounted for rotation in the casing, balls disposed between the races, the tracks of the races being so shaped that an axial force on the rotatable second ball race results in a rotary movement of the latter, a flange on the armature which engages behind the rotatable ball race and which carries spur teeth having inclined flanks and cooperating with corresponding spur teeth on the rotatable second ball race, restoring springs imparting to the rotatable second ball race an initial force opposite in direction to the rotation produced by the armature, a catch device for determining the steps, pins on the side of the rotatable ball race opposite the ball tracks, said pins extending axially away from the race, and an annular spring casing having peripheral slots which match with and engage said pins with compression springs positioned in the slot, said springs are supported at one end against the spring casing and at the other end act on the pins of the rotatable ball race.

3,940,643

CRYOGEN-COOLED SYNCHRONOUS COMPENSATOR

Zigurd Karlovich Sika, ulitsa Vaidavas, 27, kv. 40, and Daniel Petrovich Kikust, ulitsa Bikernieku, 81, kv. 34, both of Riga, U.S.S.R.

Filed June 18, 1974, Ser. No. 480,533
Int. Cl.² H02K 9/00
U.S. Cl. 310—52 7 Claims



1. A cryogen-cooled synchronous compensator, comprising: a fixed cryostat;

an armature winding made of a material exhibiting superconductivity at sufficiently low temperatures;

a rotary assembly including a rotor with a starting motor and a field generator mounted on a shaft of the rotor;

a field winding arranged on said rotor and made of a material exhibiting superconductivity at predetermined low temperatures;

said armature winding and said rotary assembly being accommodated within said fixed cryostat;

an airtight housing accommodated within said cryostat;

said rotary assembly being enclosed in said cryostat in said fixed airtight housing adapted to prevent the cryogen fluid from contacting the rotary members of the machine;

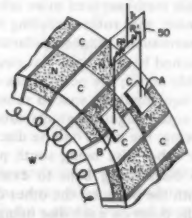
said rotary assembly being rotatably mounted in said airtight housing.

3,940,644

PLURAL BRUSH DC MACHINE AND COMMUTATOR ASSEMBLY

August Frederick Manz, Union, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 15, 1974, Ser. No. 514,733
Int. Cl.² H02K 13/00
U.S. Cl. 310—148 7 Claims



1. In a direct current machine comprising: a field structure; an armature adapted for rotation within said field structure and having an armature winding consisting of a plurality of armature coils; a single commutator mounted for rotation with said armature and divided into a multiple number of commu-

tator bars each insulated from one another; said armature coils being electrically coupled to said commutator bars; and at least two commutating brush sets arranged for relative sliding engagement against the current transfer surface of each commutator bar along separate paths respectively, the improvement comprising: wherein the current transfer surface of each commutator bar includes at least one conducting section and one nonconducting section respectively with each section lying in a separate path and with the abutting sections of adjacent commutator bars arranged so as to form a checkerboard pattern of conducting and nonconducting sections along the separate paths traversed by each brush set; and circuit means for electrically coupling said brush sets to one another.

3,940,645

SMALL-SIZED SYNCHRONOUS MOTOR

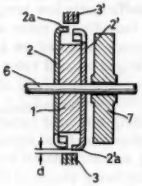
Ryoichi Takita, Urawa, Japan, assignor to Rhythm Watch Co. Ltd., Japan

Filed Oct. 24, 1974, Ser. No. 517,779

Claims priority, application Japan, Oct. 30, 1973, 48-124972

Int. Cl.² H02K *21/12*

U.S. Cl. 310—156 **6 Claims**



1. A synchronous motor for clocks comprising, in combination, an axially elongated multiturn winding adapted to be energized by connection to a source of AC potential; a stator of magnetically permeable metal including a core extending through said winding and two substantially flat stator sections having first ends connected to respective opposite ends of said core and second ends in spaced opposed relation to define an air gap therebetween; said second ends conjointly forming a circular opening intersected by said air gap and having its periphery formed with peripherally spaced notches to define plural stator pole faces; and a substantially flat rotor of magnetically permeable metal secured to an arbor and disposed in said circular opening, said rotor including a thin substantially flat cylindrical permanent magnet polarized axially of said arbor and sandwiched between two flat circular discs of magnetically permeable metal; the peripheries of said discs being notched to form equiangularly spaced substantially rectangular poles having equal angular extents substantially equal to their angular spacing; the poles on one disc being north poles and those on the other disc being south poles; the poles on each of the two discs being bent to extend axially toward facing relation with the poles on the other disc and parallel to said arbor, with the poles on each disc being staggered peripherally relative to the poles on the other disc; the free ends of the poles on each disc being spaced axially from the free ends of the poles on the other disc to provide gap distance between the north and south poles, and the gap distance between the north and south poles being greater than the radial gap between the rotor poles and said stator pole faces.

3,940,646

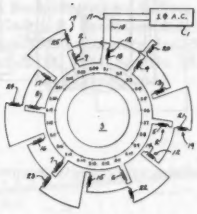
SINGLE-PHASE INDUCTION MOTOR

John B. Buckman, Troy, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Mar. 28, 1974, Ser. No. 455,670

Int. Cl.² H02K *17/04*

U.S. Cl. 310—166 **9 Claims**



1. A single-phase induction motor operable when energized by a single-phase alternating current, comprising rotor means providing an output, a stator assembly mounted adjacent to said rotor means and having a plurality of spaced winding slots, main winding means including a coil positioned within a first slot for providing a first electrical phase axis when energized by the single-phase alternating current, auxiliary winding means including a coil positioned within a second slot for providing when energized a second electrical phase axis displaced by approximately 90 electrical degrees from said first phase axis, and pick-up winding means including a coil separate from said auxiliary coil and positioned within the electromagnetic field of said main coil and continually connected during the starting and running sequences of said motor in series closed loop electrical circuit with said auxiliary coil to provide a starting torque to said rotor means in response to the energization of said main coil by said single-phase alternating current.

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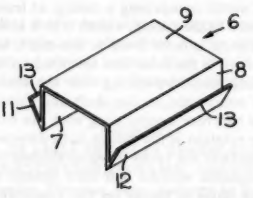
SLOT CLOSURE FOR DYNAMOELECTRIC MACHINE

John J. Keuper, Cold Spring, Ky.; Virgil R. Scardina, Milford, and Paul D. Wagner, Cincinnati, both of Ohio, assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 27, 1974, Ser. No. 527,810

Int. Cl.² H02K *3/48*

U.S. Cl. 310—214 **6 Claims**



1. A slot closure for a dynamoelectric machine adapted to be positioned in a coil slot having side walls and a radially facing open end to hold the machine coil sides in place comprising: a substantially inverted U-shaped body portion having a pair of legs spaced apart a distance substantially equal to the width of said coil slot and connected together by a top portion; and a pair of outwardly disposed tabs connected to the outside of said legs having terminal end edges facing upwardly toward said top portion and when not inserted in said slot being spaced apart a distance greater than the normal width of said slot, said tabs being resilient and capable of being compressed to the width of said coil slot without losing their resiliency,

said slot closure being insertable downwardly into said slot from said open end with the legs straddling the coil sides and the tabs being compressed by the slot side walls until the top portion engages the top of said coil side, said terminal end edges of said tabs engaging said side walls to prohibit removal of said slot closure upwardly from said open end of said coil slot.

3,940,648

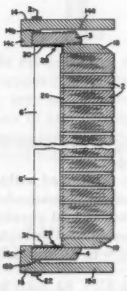
LAMINATED CORE AND SUPPORT ASSEMBLY FOR A DYNAMOELECTRIC MACHINE

Warren Pierce Wielt, and Luis Alberto Estrada, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 5, 1974, Ser. No. 503,269

Int. Cl.² H02K *1/06*

U.S. Cl. 310—217 **6 Claims**



1. A dynamoelectric machine magnetic core assembly comprising, a stack of generally flat, insulated metal laminations arranged in face-to-face relationship to define a rotor-receiving bore, first and second clamping annuli positioned respectively at the opposite ends of said stack of laminations with an inner portion of each annulus extending radially outward from the stack, a first and a second annular spacer block disposed, respectively, between one clamping annulus and one end of the stack of laminations, a plurality of elongated bars having their respective ends welded to the respective radially outwardly extending portions of the sides of said annuli facing the ends of said stack, at least one of said annuli being formed with said inner portion thereof deflected axially outward with respect to said outer portion thereof, each of said bars being substantially equal in length and in the range of 4 to 60 mils shorter than the combined axial length of the stack of laminations and said shorter spacer blocks, thereby to cause the clamping annuli to apply a continuous compressive force on the stack of laminations.

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SPARK PLUG CONSTRUCTION

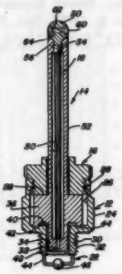
Francis E. Berstler, R.D. No. 2, Etters, Pa. 17319

Filed July 9, 1974, Ser. No. 486,854

Int. Cl.² H01T *13/28, 13/56, 13/08*

U.S. Cl. 313—122 **4 Claims**

1. A spark plug including a tubular base having large and small diameter end portions and defining a small diameter central bore extending through the small diameter end portion, a coaxial large diameter bore extending through the large diameter end portion communicating with said small diameter bore and an annular shoulder at the inner end of the large diameter bore facing toward the outer end thereof, a one-piece tubular insulative body including a diametrically enlarged mid-portion and opposite smaller diameter end portions, said body being telescoped into the tubular base with said mid-portion loosely received in said large diameter bore and seated against said shoulder and one of said smaller diameter end portions projecting into and loosely received in said small diameter bore, at least the free end of said one smaller diameter end portion having a central bore formed therethrough terminating inwardly in an enlarged counterbore opening outwardly through the other small diameter end portion, an electrode rod loosely telescoped into said counterbore and seated in the inner end thereof, a combined closure and electrical terminal removably secured in the outer end of said counterbore and electrically engaged with the adjacent end of said rod, said small diameter end of said base including



a ground electrode including a portion thereof registered with but spaced from the outer end of said central bore, and a thrust nut telescoped over the other smaller diameter end portion of said insulating body, abutted against the adjacent axial end of said mid-portion and threadedly engaged in said large diameter bore, said shoulder including a peripherally continuous groove formed therein and the adjacent axial end of said enlarged mid-portion of said body includes a peripherally continuous rib tightly seated in said groove, the engagement of said rib in said groove comprising the sole area of direct contact of said insulative body with said base.

3,940,650

ELECTRIC INCANDESCENT LAMP

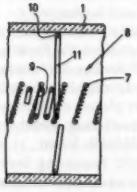
Eduard Jozef Philomena Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,821

Claims priority, application Germany, Mar. 25, 1974, 7410382[U]

Int. Cl.² H01K *1/18*

U.S. Cl. 313—222 **1 Claim**



1. An electric incandescent lamp, in particular a halogen incandescent lamp, comprising a tubular envelope which is closed at both ends by a pinch seal and in which a coiled-coil filament is stretched which extends coaxially in the envelope and which is supported in at least one place between the pinch seals by a support which is formed from a metal wire, of which support a first helically wound part supports the filament and a second part bears on the inner wall of the envelope, characterized in that the first part comprises at least two turns, the winding sense of which corresponds to that of the secondary

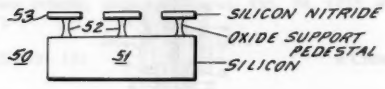
winding of the filament and which part is present inside the secondary winding of the filament.

3,940,651

TARGET STRUCTURE FOR ELECTRONIC STORAGE TUBES OF THE COPLANAR GRID TYPE HAVING A GRID STRUCTURE OF AT LEAST ONE PEDESTAL MOUNTED LAYER

Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronics Products, Inc., North Brunswick, N.J.

Filed Mar. 8, 1974, Ser. No. 448,613
Int. Cl.² H01J 31/08, 29/41
U.S. Cl. 313—391 8 Claims



1. An electronic storage tube having a target structure including first means substantially unaffected by ionizing radiation which is present during operation of the tube for significantly improving the image retention time of the target structure wherein said tube comprises:

second means including means for generating an electron beam for applying a signal to the target structure to establish a desired stored charge distribution on the target structure representative of the image to be stored;

third means for detecting the stored charge distribution estalished on the target structure and wherein said first means comprises a pattern of conducting and insulating areas, said conducting areas being electrically connected to each other to form a conducting member having at least one planar surface;

said insulating areas being formed of first and second layers of insulating materials placed upon a first planar surface of said conducting member;

each of said layers having first and second planar surfaces, the first planar surface of a first one of said layers being in contact with the planar surface of the conducting member and the second planar surface of said one of said layers being in contact with the first planar surface of the second one of said layers;

the second planar surface of the second insulating layer which is furthest removed from said conducting member constituting the surface for storing the charge pattern;

said layers being arranged to overlie portions of said conducting member planar surface while the remaining portions of said conducting member planar surface are exposed to said electron beam;

at least one of said insulating layers being formed of an insulating material whose conductivity is unaffected by the presence of ionizing radiation to prevent the transfer of charge stored on the stored charge surface to significantly increase image retention time;

said one layer in contact with the conducting member forming slender pedestals for supporting and insulating the associated charge storage surface layer from said conducting member;

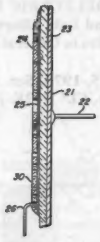
said pedestals having cross-sections smaller than their charge storage surfaces whereby the pedestals aid in preventing the transfer of charge from the charge storage surface to said conducting member.

3,940,652

JUNCTION TARGET MONOSCOPE

Amos Picker, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 228,732, Feb. 23, 1972, abandoned, which is a continuation of Ser. No. 37,552, May 15, 1970, abandoned. This application Jan. 10, 1974, Ser. No. 433,014
Int. Cl.² H01J 31/16, 29/45
U.S. Cl. 313—401 4 Claims



1. A signal generating device comprising:

an evacuated envelope;

a source of electrons positioned within said envelope;

a body comprising silicon semiconductor material spaced from said source within said envelope, said body having at least one junction therein providing a lower resistance to charge carrier flow in the forward direction than in the reverse direction;

said junction comprising a layer of P-type semiconductor material diffused into an N-type region of said semiconductor material and extending substantially continuously across the surface of said semiconductor body facing said source of electrons; said P-type layer having substantially less resistivity than said N-type region of said semiconductor material;

means producing charge carrier flow in said semiconductor material comprising electrodes contacting said semiconductor body on the opposite sides of said junction and means directing a beam of electrons from said source toward said junction;

means interposed between said source and said junction for varying the number of electrons of said beam striking said junction; and said means for varying said portion of electrons comprising a layer of insulating material impervious to penetration of electrons from said beam and having apertures therein through which electrons from said beam pass with sufficient velocity to produce charge carrier multiplication in said semiconductor material.

3,940,653

ARC DISCHARGE DEVICE, IN PARTICULAR A PLASMA BURNER

Claude R. Schnell, Brig; Kurt Hengartner, Visp, and Heinz Gross, Brig, all of Switzerland, assignors to Lonza Ltd., Gampel, Valais, Switzerland

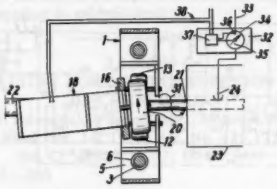
Filed Sept. 6, 1974, Ser. No. 503,869
Claims priority, application Switzerland, Sept. 19, 1973, 13476/73
Int. Cl.² H05H 1/26
U.S. Cl. 314—69 9 Claims

1. A device for feeding a cylindrical bar-type electrode into a plasma burner and simultaneously rotating said electrode comprising:

supporting means sustaining the electrode on two longitudinally extending and circumferentially spaced surface lines thereof and having two non-deformable surfaces which in contact with the electrode have a substantially low coefficient of friction;

a driving roller having its axis inclined at an acute angle to said surface lines of the electrode;

a surface layer on said driving roller which is elastically deformable and in contact with said electrode and has a coefficient of friction substantially higher than that of said surfaces of said supporting means;



means for urging said driving roller against said electrode sustained by said supporting means, thereby pushing the electrode partially into said elastically deformable high friction surface layer of said driving roller and providing a contact area between said layer and said electrode; and

driving means connected with said driving roller for rotation thereof.

3,940,654

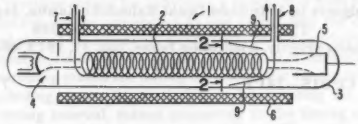
TRAVELING WAVE TUBE HAVING TAPERED LONGITUDINALLY DIRECTED LOADING CONDUCTORS AT THE OUTPUT

Lester M. Winslow, Buffalo Grove, Ill., assignor to Varian Associates, Palo Alto, Calif.

Filed Dec. 16, 1969, Ser. No. 885,517

Int. Cl.² H01J *25/34*

U.S. Cl. 315—3.5 **8 Claims**



1. In a traveling wave tube amplifier, means forming a helix derived slow wave circuit arranged for electromagnetic interaction with a stream of electrons passable along said slow wave circuit, means at the downstream end of said slow wave circuit for coupling amplified radio frequency output signals from said slow wave circuit, THE IMPROVEMENT COMPRISING, means forming an elongated conductive loading structure disposed outside of said slow wave circuit and extending along said slow wave circuit for conducting radio frequency currents associated with the space outside of said slow wave circuit in a direction along the length of said slow wave circuit, said elongated conductive loading structure including at least a portion thereof which comprises an axially elongated radially projecting vane means for perturbing such radio frequency currents tending to flow circumferentially around the axis of said slow wave circuit, and the radial spacing from said loading structure to said slow wave circuit progressively decreasing toward the downstream end of said slow wave circuit in a region adjacent the downstream half of said slow wave circuit to progressively decrease the phase velocity of signal wave energy on said circuit for frequencies of such energy at the band edges of the operating passband of said circuit to increase the interaction efficiency of the traveling wave tube amplifier over its operating band.

3,940,655

MICROWAVE ELECTRONIC TUBE WITH AN IMPROVED COLLECTOR

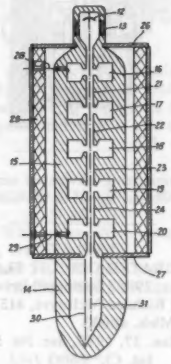
Pierre Palluel; Jean Hervier, and Jean Rousseau, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed June 13, 1974, Ser. No. 479,136

Claims priority, application France, June 19, 1973, 73.22306

Int. Cl.² H01J *25/34*

U.S. Cl. 315—3.5 **5 Claims**



1. A microwave electronic tube comprising within an evacuated enclosure, arranged in alignment along an axis, an electron gun, an interaction space, a hollow collector for producing an electron beam propagating in operation from said gun through said space towards said collector, characterised in that said tube comprises means to produce a magnetic field on the path of said beam whose lines of force are parallel to said axis and means to stop said lines of force at the entrance of the beam into said collector so as to guide the electron beam through said entrance, whose axis is coincident with said axis, into said collector, in which it flares and impinges on a receiving area of the collector, and characterised in that at least the part of said collector on which said impingement takes place exhibits a portion having an axis of symmetry, said tube being further characterised in that said entrance axis is displaced in a transverse direction with respect to said axis of symmetry.

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HIGH FREQUENCY TUBE APPARATUS

Curtis E. Ward; Maurice W. St. Clair, both of Palo Alto; James M. De Pue, Jr., Mountain View, all of Calif., and Albert J. Miller, Georgetown, Canada, assignors to Varian Associates, Palo Alto, Calif.

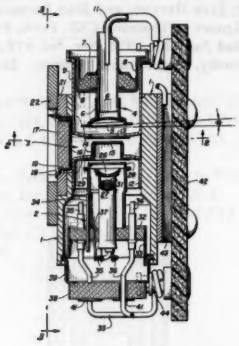
Filed June 13, 1957, Ser. No. 666,277

Int. Cl.² H01J *9/38, 19/72, 25/22;* **H01P** *7/06*

U.S. Cl. 315—5.18 **8 Claims**

2. In a reflex klystron tube apparatus, means for forming a beam of electrons, a resonator means positioned along the beam path, said resonator means being apertured for the passage of the beam of electrons therethrough for electromagnetic coupling to the beam, reflector means disposed on the side of the resonator remote from said means for forming the beam of electrons, said reflector means serving for reflecting the electrons incident upon the reflecting fields of said reflector means back through said resonator means substantially along the incident beam path, said means for reflecting the electrons formed and arranged to impart a slight transverse

velocity to the electrons whereby they are caused to move transversely of and out of the beam in a small number of beam



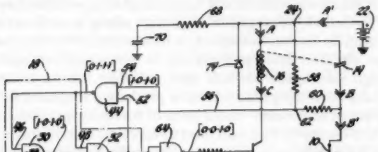
transits thereby minimizing unwanted amplitude and power modulation in the output signal of the tube apparatus.

3,940,657

INTEGRATED CIRCUIT FLASHER

Stanley J. Kasiewicz, 29852 Springhill Drive, Southfield, Mich. 48076, and Earl Richard McIntyre, 4153 Hardwoods Drive, Orchard Lake, Mich. 48033

Filed Jan. 27, 1975, Ser. No. 544,243
Int. Cl.² B60Q 1/42
U.S. Cl. 315—77 **10 Claims**



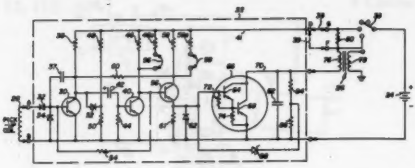
1. For use with a flasher circuit of the type comprising a voltage source, an electrically actuated switching means, a manually actuated switching means, a load device, both of said switching means and said load device being connected in a series circuit across the voltage source, said electrically actuated switching means being adapted for intermittent actuation under the control of periodic control signal from an oscillator when said manually actuated switching means is closed, whereby an intermittent voltage is applied across the load device, the improvement wherein said oscillator is a free running multivibrator having an output and an input and being adapted to produce a periodic control signal at said output when an enabling signal is applied to said input, said improvement further comprising enabling means having first and second inputs and an output, the first input of the enabling means being connected with said series circuit to sense the voltage across the load device, the second input of the enabling means being connected with the output of said oscillator, the output of the enabling means being connected with the input of the multivibrator, said enabling means being adapted to produce an enabling signal when the first and second input signals are in a predetermined state relative to each other whereby the multivibrator is caused to run so long as said manually actuated switch is closed.

3,940,658

ELECTRONIC IGNITION CONTROL SYSTEM

Michael V. Allred, Irving, Tex., assignor to Superior Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 427,584, Dec. 26, 1973. This application May 20, 1974, Ser. No. 471,814
Int. Cl.² F02D 1/00
U.S. Cl. 315—209 T **17 Claims**



7. A firing circuit in an ignition control system responsive to an electrical signal from a mechanical-to-electrical transducer and providing a control voltage to an ignition transformer generating a trigger voltage to a spark source, comprising in combination:

a multiple stage pulse width amplifier having an input transistor and an output transistor;

a capacitor filter connected between the collector and base electrodes of the input transistor;

an output driver including a semiconductor amplifier connected to the output transistor and providing a control voltage to the ignition transformer; and

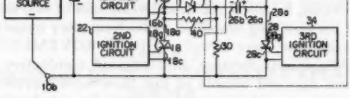
a clamping circuit including a voltage dependent, symmetrical resistor that changes impedance when exposed to a high energy voltage connected across said semiconductor amplifier to provide overvoltage protection for said semiconductor amplifier.

3,940,659

DISCHARGE DEVICE CONTROL CIRCUIT INCLUDING A THYRISTOR

Suzuo Kojima, and Yoshio Fujimaru, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 30, 1974, Ser. No. 437,788
Claims priority, application Japan, Jan. 31, 1973, 48-12671
Int. Cl.² H05B 41/32
U.S. Cl. 315—241 P **7 Claims**



1. A control circuit for controlling an electric discharge device, comprising, in combination:

a first circuit branch comprising an electric discharge device and a thyristor connected in series with said discharge device for controlling current flowing through said discharge device and flowing through the node at which said discharge device and said thyristor are connected;

a second circuit branch connected in parallel with said first circuit branch, said second circuit branch comprising an impedance element connected to said discharge device and a switching element connected to said thyristor and to said impedance element to define a node therewith; and

a third circuit branch connected between the node defined by said discharge device and said thyristor and the node

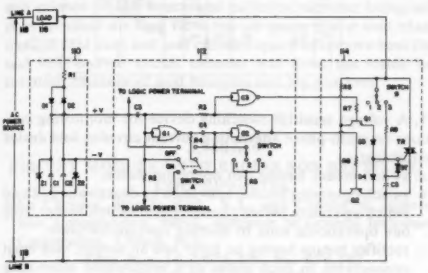
defined by said impedance element and said switching element, said third circuit branch comprising a commutation capacitor for storing and applying a reverse voltage to said thyristor under control of said switching element to bias said thyristor from a conducting to a nonconducting state, and a diode connected in series with said commutation capacitor and having a polarity effective to prevent a voltage opposite the polarity of said reverse voltage and stored on said commutation capacitor from being applied to said thyristor.

3,940,660

CIRCUITRY FOR LOAD CONNECTION AND DISCONNECTION

Frederick H. Edwards, 58 Sunset Ave., Amherst, Mass. 01002

Filed Dec. 14, 1973, Ser. No. 425,172
Int. Cl.[2] H05B 37/02; H01H 7/00
U.S. Cl. 315—360 **18 Claims**



1. In a circuit device for connection in series with a load and an AC power source such that power is delivered to the load during both positive and negative half-cycles and for the automatic disconnection of the load after a predetermined time interval, with the timing interval being variable over a period ranging from a few minutes to several hours and without restriction to a single value, the improvement comprising: output thyristor means for providing a conductive path for the load current, means connected to and controlling the output thyristor means for achieving conduction or nonconduction of the output thyristor means, timing circuit means connected to the controlling means for timing the automatic timing interval and including means for initiating or interrupting the automatic timing interval, means connected to the timing circuit means for changing the duration of the automatic timing interval, circuit voltage means for deriving a DC control voltage supply from the AC power source during periodic time intervals within the automatic timing interval when the output thyristor means is nonconductive, and means for providing the periodic time intervals during the automatic timing interval when the output thyristor means is nonconductive.

3,940,661

DEFLECTION SYSTEM WITH OVERSCAN PROTECTION

John Charles Peer, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 10, 1975, Ser. No. 548,182
Int. Cl.[2] H01J 29/56
U.S. Cl. 315—370 **5 Claims**

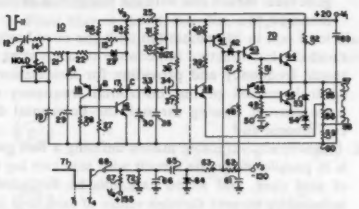
1. A deflection system overscan protection circuit, comprising:

an oscillator for producing a generally sawtooth waveform;

a deflection winding;

an amplifier coupled to said oscillator and said deflection winding and responsive to said sawtooth waveform for providing a generally sawtooth scanning current to said deflection winding;

means for obtaining a parabolic voltage waveform from said deflection winding, which parabolic voltage waveform is proportional to the amount of scanning current through said deflection winding, and for coupling said parabolic voltage to said oscillator for superimposing said parabolic



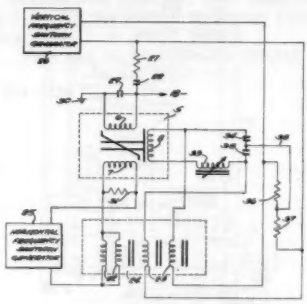
voltage on a direct current operating voltage of said oscillator such that a change in said parabolic voltage causes said oscillator to change its frequency, thereby changing the peak amplitude of said scanning current.

3,940,662

SATURABLE REACTOR FOR PINCUSHION DISTORTION CORRECTION

Patric C. Quirke, Whitewater, Wis., assignor to Whitewater Electronics, Inc., Whitewater, Wis.

Filed Mar. 14, 1974, Ser. No. 450,990
Int. Cl.[2] H01J 29/56
U.S. Cl. 315—400 **10 Claims**



1. In apparatus for electromagnetically deflecting the electron beam of a cathode ray tube to cause it to scan a raster, comprising horizontal deflecting coil means by which the beam is deflected in one direction for linear scan at a horizontal frequency, vertical deflecting coil means by which the beam is deflected in another direction transverse to said one direction at a substantially lower vertical frequency, horizontal sawtooth generator means for generating a sawtooth wave current at said horizontal frequency, and vertical sawtooth generator means for generating a sawtooth wave current at said vertical frequency, means for correcting distortion of the raster comprising:

A. a magnetically saturable core having a pair of portions that are in series magnetic circuit with one another and provide leg segments;

B. a control coil wound transversely only around one of said leg segments of said core, said control coil in its association with said core having a high reactive impedance to current at the horizontal frequency;

C. a parabolic wave shaping circuit in which said control coil is connected and which is connected with the vertical sawtooth generator means, for producing a control current which is at said vertical frequency and which has a substantially parabolic wave shape;

D. a load coil
1. wound transversely only around the other of said leg segments and
2. connected in series circuit with the horizontal sawtooth generator means and with the horizontal deflecting coil means,

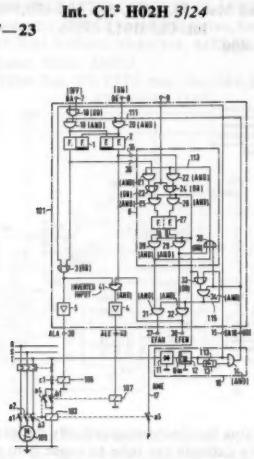
said load coil in its association with the core having a substantially low reactive impedance to current at the horizontal frequency and providing for modulation by said control current of the horizontal frequency sawtooth wave current flowing through the horizontal deflecting coil means; and

E. magnetically saturable means defining a flux path which is in parallel magnetic circuit with said two leg segments of said core, and which can thus be threaded by flux induced by current through either of said coils in bypassing relation to the leg segment around which the other coil is wound.

3,940,663
DRIVE CIRCUIT FOR A MAIN CONTACTOR

Werner Meier, Bubenreuth; Rudolf Schmidt, and Martin Kraft, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 30, 1975, Ser. No. 545,593
Claims priority, application Germany, Feb. 7, 1974, 2405908
Int. Cl.² H02H *3/24*
U.S. Cl. 317—23 **5 Claims**



1. In a drive circuit for a main contactor of the type which converts control commands from a command control transmitter into positioning commands for coupling contactors which switch the main contactors ON and OFF and which includes an end position error monitor forming end position error signals by comparing positioning command stored in command storage units with return signals from signalling contacts of the main contactor the improvement comprising:

a. means for monitoring an undervoltage of the control voltage of the main contactor and providing a protection command output which is coupled to switch off the main contactor if the voltage falls below a specified limit;

b. means for forming an undervoltage pulse output which begins with the occurence of the protection command and has a length which is the shorter of the length of the protection command and a predetermined maximum duration;

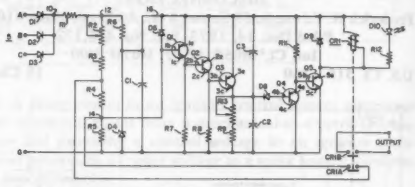
c. first blocking gates coupling the end position error signals to the command control transmitter, said gates having said undervoltage pulse output as disabling inputs; and

d. second blocking gates coupling the command storage units to inputs from the command control transmitter and having as disabling inputs said undervoltage pulse output.

3,940,664
MULTI-PHASE VOLTAGE SENSING SWITCHING DEVICE

Joseph J. Matsko, Coraopolis, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1974, Ser. No. 482,191
Int. Cl.² H02H *3/24*
U.S. Cl. 317—31 **12 Claims**



1. A voltage sensitive switching device for monitoring conditions on multi-phase alternating current circuits, said device comprising:

a. switch means having two operation states,

b. switch operating means, activation or deactivation of said switch operating means changing said switch means from one operational state to another operational state,

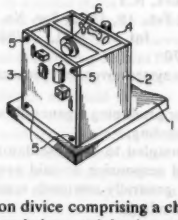
c. rectifier means having an input and an output, said input connectable to each phase of a multi-phase alternating current circuit,

d. sensing means connected to said output of said rectifier means for activating said switch operating means when the local minima of the rectified voltage of the phase having the highest instantaneous voltage passes through a first level corresponding to a first predetermined percentage of single phase normal voltage, said sensing means deactivating said switch operating means when the local minim: of the rectified voltage of the phase having the highest instantaneous voltage passes through a second level corresponding to a second predetermined percentage of single phase normal voltage.

3,940,665
CHASSIS DEVICE HAVING VENTED BASE AND RADIATION MEMBER FOR SUPPORTING HEAT SOURCES

Hideki Seki, Saijo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 337,695, March 2, 1973. This application July 3, 1974, Ser. No. 485,613
Claims priority, application Japan, Mar. 6, 1972, 47-27699
Int. Cl.² H05K *7/20*
U.S. Cl. 317—100 **2 Claims**



1. A heat dissipation divice comprising a chassis base defining an air space therebelow and having at least one vent formed in a part thereof; at least one U-shaped heat radiation

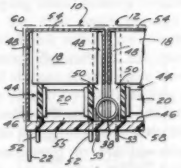
member attached to the upper surface of said chassis base, said member having a bridging portion and a pair of spaced parallel leg portions extending from both ends of said bridging portion for mounting thereon at least one heat source circuit element, each of said bridging and leg portions extending vertically upward from said chassis base and partially surrounding said vent on said chassis base; a printed circuit board extending across the opening between the leg portions of said U-shaped heat radiation member and attached to said leg portions and closing said opening by contacting the top of said chassis, said board and member forming therebetween an air flowing channel space connected to said vent, a heat source element being provided in said channel space and attached directly to the inside surface of the bridging portion of said radiation member opposite to said printed circuit board, the vertically upwardly extending bridging and leg portions of said heat radiation member having inside and outside heat radiation surfaces sufficient for radiating heat absorbed from said heat source element toward the ambient air space, the sizes of said printed circuit board and radiation member being sufficient to allow air flow from the air space below said chassis through said vent and said channel space to remove heat from said heat source circuit element and from the inside heat radiation surfaces of said bridging and leg portions.

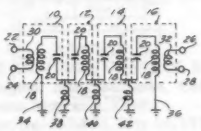
3,940,666

CIRCUIT MODULE WITH RECESS FOR RECEIVING A COUPLING COIL

John Chesney, Roselle Park, N.J., and Chester R. Kruczek, East Longmeadow, Mass., assignors to General Instrument Corporation, Clifton, N.J.

Filed June 14, 1974, Ser. No. 479,191
Int. Cl.² H02B 1/04; H03H 7/10
U.S. Cl. 317—101 C **18 Claims**





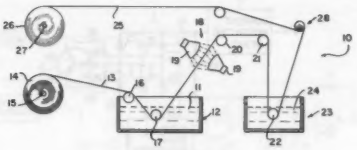
1. In combination with a circuit board, a circuit module for use with an active interconnecting electrical component for electrically connecting said module with other circuits on said board, externally of said module, said component being mounted on said board adjacent and independently of said module, said module comprising a base portion, one or more electrical circuit elements mounted on said base portion to form the module circuit, means on said base portion for mounting said module on said board and a side portion having members thereon an externally exposed recess, said recess being large enough to at least partially receive said interconnecting component therein.

3,940,667

ELECTRICAL DEVICE AND METHOD OF MAKING THE SAME

Godfrey R. Pearce, Glasgow, Ky., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Mar. 4, 1974, Ser. No. 447,974
Int. Cl.² H01G 9/00
U.S. Cl. 317—230 **11 Claims**



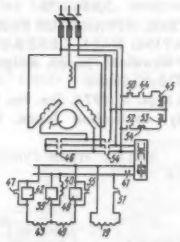
1. In combination an electrode and a polymer containing material for an electrical device, the electrode including metal containing material, the polymer containing material contiguous to the electrode, the polymer containing material at least semi-cured by radiation and retaining electrolyte.

3,940,668

DUAL DUTY DRIVE WITH INDUCTION MOTOR

Voldemar Voldemarovich Apsit, ulitsa V. Latsisa, 2a, kv. 21; Alexei Petrovich Ustinsky, ulitsa Marupes, 33, kv. 29; Vladislav Alexandrovich Pugachev, ulitsa Moskovskaya 266, korpus 5, kv. 73, and Mikhail Maiorovich Usachev, ulitsa Suvorova 70, kv. 5, all of Riga, U.S.S.R.

Filed Aug. 16, 1973, Ser. No. 388,915
Int. Cl.² H02P 1/32
U.S. Cl. 318—226 **3 Claims**

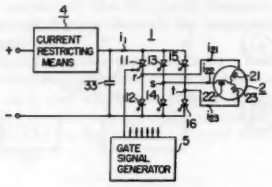


1. A dual duty drive with an induction motor having a means for switching the windings there of from star to delta connection and vice versa, also comprising a reduction gear unit disposed at the output of said induction motor and intended for transmitting power to a controlled actuating mechanism, said reduction gear unit being adapted to operate both with a present step-down gear ratio and with a gear ratio equal to or approaching unity; a control means, operatively connected to said means for switching the windings of the induction motor and to said reduction gear unit, said control means having different operating positions, whereby in one position the windings of the induction motor are star connected and the reduction gear unit is caused to operate with a step-down gear ratio, whereas in the other position the induction motor windings are delta connected and the reduction gear unit is shifted to operate with a gear ratio equal to or approaching unity.

3,940,669
AC MOTOR CONTROL SYSTEM

Takashi Tsuboi, and Tokunosuke Tanamachi, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 22, 1974, Ser. No. 526,405
Claims priority, application Japan, Dec. 7, 1973, 48-136041
Int. Cl.² H02P 5/40
U.S. Cl. 318—227 **7 Claims**

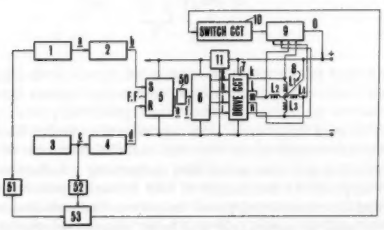


1. An A.C. motor control system comprising:
a thyristor inverter including a plurality of thyristors adapted to be fed from a D.C. power source to thereby produce A.C. power;
an A.C. motor connected to the output terminals of said inverter;
a capacitor connected between the input terminals of said inverter, said capacitor forming an electrical oscillation circuit in combination with the inductance of the armature windings of said A.C. motor to pass a sinusoidal half-wave current through said armature windings when the thyristors of said inverter are triggered; and
gate signal generating means repeatedly supplying the respective electrodes of said plurality of thyristors constituting said inverter with gate signals in predetermined sequence, whereby said motor is supplied with pulse currents.

3,940,670
SPEED CONTROL APPARATUS FOR A D.C. MOTOR HAVING HALL GENERATORS

Kinji Tanikoshi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 4, 1974, Ser. No. 503,087
Claims priority, application Japan, Sept. 7, 1973, 48-100835
Int. Cl.² H02K 29/02
U.S. Cl. 318—254 **9 Claims**

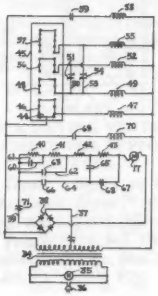


1. A D.C. motor and control system therefor comprising:
a rotor having magnetic poles of opposite polarities thereon;
a stator having flux-producing windings positioned in torque-producing relation to said rotor;
detecting means for generating an electrical signal representing the instantaneously changing rotational speed of said D.C. motor;
reference signal generating means for generating a reference signal corresponding to a predetermined constant speed of said D.C. motor;
comparator means for comparing the electrical output signal of said detecting means with the reference signal from said reference signal generating means for providing a signal representing the difference between said two signals;
Hall generators positioned in flux-sensing relationship to said magnetic poles for detecting the instantaneous rotational speed thereof, said Hall generators generating electrical signals of a frequency representing the instantaneously changing rotational speed of said D.C. motor and of an amplitude corresponding to the output signals from said comparator means;
driving control means connected to the output of Hall generators and said stator windings for applying an exciting current to said windings in response to the output signal of said Hall generators;
motor speed detecting means which detects voltage induced in said motor windings when motor driving current does not flow in said stator windings;
switching means for supplying controlling current corresponding to the output signals from said motor detecting means to said stator windings in a direction opposite to the driving current; and
second comparator means having a first input terminal which detects electrical signals from the detecting means and a second input terminal which detects reference signals, from the reference signal generating means, and generating control signal which puts the switching means into operation when the electrical signal from the detecting means are larger than the reference signals from the reference signal generating means.

3,940,671
CONTROL CIRCUIT FOR AMUSEMENT DEVICE

Jerry C. Koci, Barrington, Ill., assignor to Chicago Dynamic Industries, Inc., Chicago, Ill.

Filed Aug. 12, 1974, Ser. No. 496,390
Int. Cl.² H02P 5/30
U.S. Cl. 318—349 **4 Claims**



1. A speed control system for use in an amusement device of the simulated driving type, including
a. an electric motor,
b. a circuit for energizing the motor,
c. a plurality of resistors connected in series in said circuit for the motor, normally restricting an operating current to the motor,
d. a plurality of relay switches connected in parallel, with certain of said relay switches in open shunt circuits with respect to certain of said resistors,
e. a plurality of relays for activating said relay switches in the circuit for energizing the motor,
f. means for selectively energizing said relays so as to close their respective said relay switches to shunt one or more

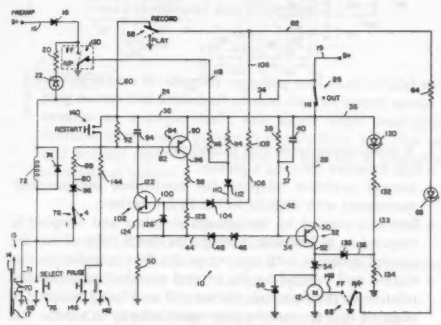
of said resistors so as to increase the energizing current to the motor, and

g. manually operated means for controlling the energization of certain of said relays by said means for selectively energizing said relays to render said relay switches of said certain relays ineffective to close a shunt circuit with respect to certain of said resistors.

3,940,672
TAPE RECORDING AND PLAYBACK CONTROL CIRCUIT

John D. Vogel, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Aug. 14, 1974, Ser. No. 497,274
Int. Cl.² G11B *75/48*; G05D *3/06*
U.S. Cl. 318—467 **17 Claims**



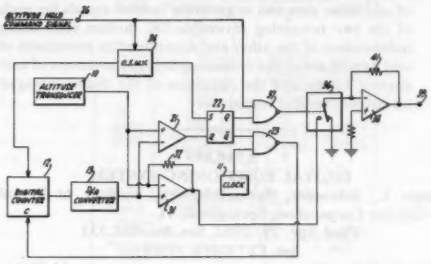
1. An electronic control circuit for controlling the energization of the tape drive motor of a tape recording and playing unit, comprising a voltage source connected to the drive motor for energizing said motor to convey tape past the unit recording and playing head; sensing means for detecting indicating means on the tape upon passage of said indicating means past the unit head; solid state switching means coupled between said sensing means and the motor for electrically disconnecting said voltage source from the motor upon detection of indicating means by said sensing means; and inhibit means having a diode with an anode and a cathode, said anode being connected to said solid state switching means and said cathode being connected to biasing means for selectively biasing said diode, said inhibit means being operative when said diode is forward-biased to prevent said solid state switching means from electrically disconnecting said voltage source from the motor.

3,940,673
AIRCRAFT ALTITUDE CONTROL SYSTEM

William W. Darlington, Sherman Oaks, Calif., assignor to Edcliff Instruments, Monrovia, Calif.

Continuation of Ser. No. 360,314, May 14, 1973, abandoned.
This application Oct. 29, 1974, Ser. No. 518,230
Int. Cl.² B64C *13/18*; G05D *1/08*; H03K *13/02*
U.S. Cl. 318—584 **4 Claims**

1. In a system for sampling and holding analog signals corresponding to the altitude of an aircraft and providing a control signal for maintaining the aircraft at the altitude corresponding to the level of the altitude signal when sampled, altitude transducer means for providing an analog altitude signal corresponding to the altitude of the aircraft, a source of clock pulses, digital counting means, digital-to-analog converter means connected to the counting means for providing an analog output signal having a level corresponding to the count registered by the counting means, gating means connected between the source of pulses and the counting means for passing pulses from the source to the counting means in the presence of an enabling signal and blocking the passage of pulses in the absence of the enabling signal, bistable means connected to the gating means and having first and second output states, said bistable means being adapted for delivering an enabling signal to the gating means when in its first output state, means for resetting the counting means to an initial level and setting the bistable means to its first output state in response to an externally applied command signal, comparator means responsive to the altitude and output signals for delivering a signal to the bistable means for switching the same to its second output state to remove the enabling signal from the

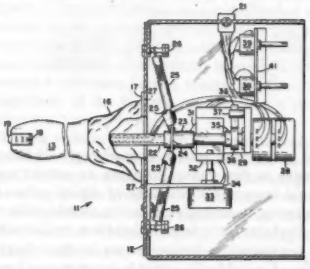


gating means when the output signal reaches the level of the altitude signal, thereby blocking the delivery of further pulses to the counting means so that the count registered by the counting means and the output signal remain at levels corresponding to the altitude of the aircraft at the time the command signal is applied, and means responsive to the altitude and output signals for providing an altitude correction signal corresponding to the difference between the altitude signal and the output signal when the bistable means is in its second output state.

3,940,674
SUBMARINE OR VEHICLE STEERING SYSTEM

George H. Gill, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1972, Ser. No. 244,084
Int. Cl.² G05D *1/02*; B63H *25/02*
U.S. Cl. 318—589 **10 Claims**



1. A control system for selective actuation of four reversible DC motor systems comprising:

a control handle movably mounted for rotation about three mutually perpendicular axes;

first electromechanical transducer means mechanically coupled to said control handle for generating an electrical analog signal in response to movement of said control handle about each of said three axes;

hand grip means mounted on said control handle and shaped to be gripped by a closed human hand for providing a handle engaging surface for said control handle

which may be operated for extended periods without fatique;

second electromechanical transducer means carried by said hand grip means and positioned thereon so as to be engagable by the thumb of an operator using the handle for providing an additional parameter of control than that provided by the handle coupled transducer means; and

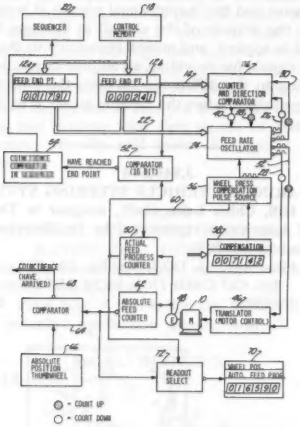
circuit means connected to each of said electromechanical transducer means in such a fashion as to generate control signals for two of the four reversible DC motors which are dependent on movement of said control handle about two of said three axes and to generate control signals for each of the two remaining reversible DC motors each being independent of the other and dependent on movement of said handle about the remaining axis of movement of said control handle and the operation of the thumb engaged electromechanical transducer.

3,940,675

DIGITAL POSITIONING SYSTEM

Roger L. Schroeder, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Filed Apr. 29, 1974, Ser. No. 465,333
Int. Cl.² G05B *19/28*
U.S. Cl. 318—603 **11 Claims**



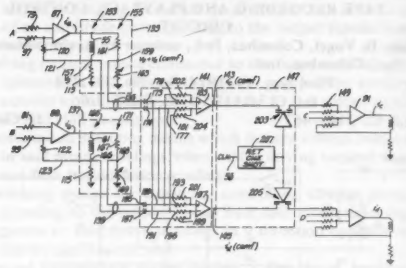
1. A digital positioning system comprising: a bidirectional motor responsive to first pulses to move an output member through discrete increments; a source of digital pulses representing said increments said source having an add pulse output representing displacements in one direction and a substract pulse output representing displacements in the other direction; a plurality of individually settable input means for designating a plurality of sequentially selectable desired end positions of said output member, means for producing second pulses representing increments and direction of actual displacement thereof; first comparator means connected to the add and subtract pulse outputs and to the input means for sequentially comparing a net cumulative count of add and subtract pulses applied by the source to the motor with selected end position counts and controlling the flow of pulses from the source to equalize the net count with the selected end position count; and second comparator means for individually comparing the selected end position counts with actual pulse counts from the encoder to determine when the output member reaches the selected end position.

3,940,676

DAMPING CONTROL FOR POSITIONING APPARATUS

Tex Monroe Dudley, Palo Alto, Calif., assignor to Electroglas, Inc., Santa Clara, Calif.

Filed Oct. 11, 1974, Ser. No. 513,966
Int. Cl.² G05B *5/01*; H02K *41/02*
U.S. Cl. 318—612 **14 Claims**



1. A positioning apparatus including:

a first member forming a platen;

a second member adapted for controlled independent movement with respect to the first member;

a first coil carried by the second member and adapted to respond to a first electromagnetic force to position the second member with respect to the first member;

a second coil carried by the second member and disposed relative to the first coil, the second coil being adapted to respond to a second electromagnetic force to aid the first coil in positioning the second member with respect to the first member;

the first and second electromagnetic forces having variable characteristics for moving the second member relative to the first member and having constant characteristics for maintaining the second member at a predetermined point relative to the first member;

the second member having inertia characteristics for physically oscillating about the predetermined point following abrupt transitions from the variable to the constant characteristics of the first and second electromagnetic forces;

the first coil being responsive to the oscillating of the second member relative to the first member to produce in the first coil a first signal representative of a back-electromotive force in the first coil;

the second coil being responsive to the oscillating of the second member relative to the first member to produce in the second coil a second signal representative of a back-electromotive force in the second coil;

means for detecting the signal representative of the back-electromotive force in the first coil for producing a damping signal; and

means for introducing the damping signal to the second coil to damp the second signal representative of the backelectromotive force in the second coil and thereby inhibit the oscillating of the second member relative to the first member.

3,940,677

DIRECT-CURRENT STEPPING MOTOR DRIVE SYSTEM

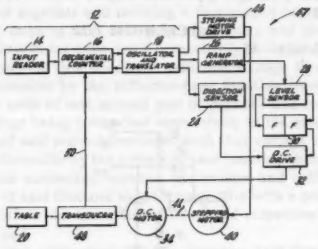
Ronald Morino, Sea Cliff; William B. Tucker, East Norwich, and Raymond J. Keogh, Huntington, all of N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Hartford, Conn.

Filed Nov. 6, 1973, Ser. No. 413,334
Int. Cl.² G05B *11/32*, *19/40*; H02K *17/34*
U.S. Cl. 318—685 **7 Claims**

1. A drive system for developing a controlled mechanical output, comprising:

a stepping motor having a shaft which is rotatable in response to a first input signal means;

a direct-current motor having a shaft which is rotatable at constant torque in response to a second input signal means;



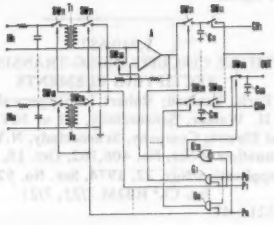
coupling means for directly coupling said shaft of said stepping motor and said shaft of said direct-current motor in tandem as a single shaft, said single shaft undergoing rotation in response to output signals from said first and said second input signal means to provide a controlled mechanical output.

3,940,678

MULTI-INPUT SWITCHING MEANS

Hiroshi Koyama, Kamakura, Japan, assignor to Yamatake-Honeywell Company Ltd., Tokyo, Japan

Filed Dec. 31, 1974, Ser. No. 537,752
Int. Cl.[2] H02M *3/06*; H02J *15/00*; G11C *11/24*
U.S. Cl. 320—1 7 Claims



1. A multiplexing switching system comprising a plurality of signal input channels;

a plurality of reactive isolating means;

a plurality of multiplex switch members connected, respectively, between said input channels and said reactive isolating means;

means for actuating said multiplex switch means sequentially at a predetermined rate with a predetermined close-time for each actuation of each of said switch members;

a plurality of data storage devices;

a plurality of commutating switch members connected, respectively, between said reactive isolating means and said data storage devices;

means for actuating said commutating switch members synchronously with respect to said multiplex switch members but with a predetermined close-time which is less than the close-time of said multiplex switch members;

an output circuit;

a plurality of read-out scanning switch members connected, respectively, between said data storage devices and said output circuit; and

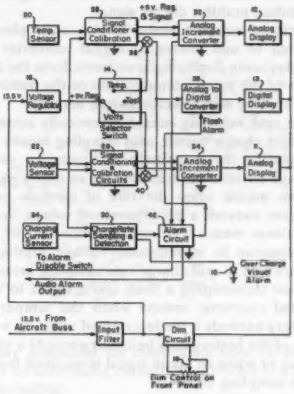
means for actuating said read-out scanning switches asynchronously with respect to said multiplexing switch members.

3,940,679

NICKEL-CADMIUM BATTERY MONITOR

Rowland Brandwein, Mission, and Mohan L. Gupta, Shawnee Mission, both of Kans., assignors to Textron, Inc., Providence, R.I.

Filed June 18, 1974, Ser. No. 480,479
Int. Cl.[2] H02J *7/00*; G01M *27/02*
U.S. Cl. 320—48 6 Claims



1. Device for monitoring nickel-cadmium battery which comprises:

a sensor for measuring the temperature of the battery, a sensor for measuring the voltage at the terminals of the battery and a sensor for measuring the magnitude of the current being discharged by and being charged to the battery, each of said sensors generating a sensor signal voltage that varies directly with the magnitude of the parameter being measured;

a temperature sensor signal voltage conditioning and calibrating means electrically connected to the temperature sensor, and a voltage sensor signal voltage conditioning and calibrating means electrically connected to the voltage sensor, each of said conditioning and calibrating means transforming the sensor signal voltage from the sensor connected thereto to a conditioned analog signal voltage the magnitude of which is in the same relative proportion to a predetermined reference voltage as the actual magnitude of the battery temperature is to a predetermined reference battery temperature and as the actual magnitude of the battery voltage is to a predetermined reference battery voltage;

continuous voltage gradient to incremental voltage gradient converter means electrically connected to each of said signal voltage conditioning and calibrating means, said converter means dividing the continuous voltage gradient of the conditioned analog signal voltage into a predetermined number of incrementally increasing analog signal voltage increments, whereby the actual signal voltage from each said signal voltage conditioning and calibrating means is converted to an analog signal voltage increment the magnitude of which corresponds approximately to the actual magnitude of the battery temperature and battery voltage as measured;

analog signal voltage increment indicator means electrically connected to each of the continuous to incremental voltage gradient converter means, each of said indicator means having a plurality of electrically energized visual display means, each of said display means corresponding to and being energized by one of said analog signal voltage increments, whereby said indicator means visually indicates the approximate magnitude of the battery temperature and battery voltage as measured;

selector switch means also electrically connected to each of the signal voltage conditioning and calibrating means, said selector switch being adapted to select and transmit the conditioned analog signal from the temperature signal or the voltage signal conditioning and calibrating means to an analog to digital converter means;

analog to digital converter means electrically connected to said selector switch means, said converter means converting the selected conditioned analog signal to a corresponding multibit digital signal;

an array of numeric visual display units electrically connected to said analog to digital converter means, said display units displaying in numeric form the actual magnitude of the battery temperature or the battery voltage, as selected by said selector switch means;

charge rate sampling means electrically connected to the battery charge sensor, said sampling means continuously measuring the magnitude of successive samples of the charge current and transmitting an alarm signal to a flash alarm means when the rate of increase of the charge current exceeds a predetermined values; and

flash alarm means electrically connected to each of said continuous to incremental voltage gradient converter means and to said charge rate sampling means, said alarm means transmitting a flash alarm signal to the analog to digital converter means when the temperature of the battery exceeds a predetermined value or when the voltage of the battery falls below or exceeds a predetermined value or when an alarm signal is received from the charge rate sampling means.

3,940,680

A.C. - D.C. POWER CONVERTER FOR D.C. LOAD

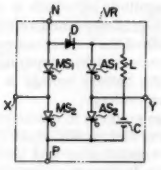
Tomio Tadokoro; Toshikatsu Kouno, and Akio Sasaki, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 24, 1974, Ser. No. 536,249

Claims priority, application Japan, Dec. 27, 1973, 48-144529; Jan. 14, 1974, 49-6593

Int. Cl.² H02M 7/00

U.S. Cl. 321—27 R 6 Claims



1. A power converter for regulating electric power supplied from a power source to a D.C. load, comprising a group of controlled rectifiers arranged to constitute a plurality of series circuits each including at least two said controlled rectifiers, said series circuits of said controlled rectifiers being connected in parallel to provide A.C. terminals at the series connection points of said controlled rectifiers and to provide D.C. terminals at the parallel connection points of said series circuits, a rectifier interposed between said parallel-connected series circuits of said controlled rectifiers, and a series circuit of a reactor and a capacitor connected in parallel with said series circuits of said controlled rectifiers.

3,940,681

WIDE AMPLITUDE RANGE DETECTING CIRCUIT

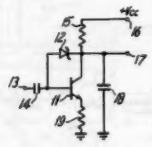
Mitsuo Ohsawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 9, 1974, Ser. No. 504,290

Claims priority, application Japan, Sept. 10, 1973, 48-101894

Int. Cl.² H02M 7/12

U.S. Cl. 321—47 10 Claims



1. A detecting circuit comprising:

A. a rectifying transistor comprising a base, an emitter, and collector, said base and emitter comprising components of a base-emitter input circuit to receive an input signal to be rectified, and said collector and said emitter comprising parts of an output circuit;

B. Zener diode switching means connected directly in series between said collector and said base, and controlled by said input signal to be conductive when said input signal has a polarity that tends to make said transistor conductive and to be non-conductive when said input signal has the opposite polarity; and

C. an output terminal connected to said output circuit to derive therefrom a rectified signal corresponding to said input signal.

3,940,682

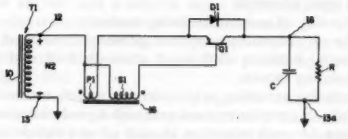
RECTIFIER CIRCUITS USING TRANSISTORS AS RECTIFYING ELEMENTS

John N. Park, Rexford; Robert L. Steigerwald, Scotia, and Loren H. Walker, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 406,162, Oct. 15, 1973. This application Nov. 22, 1974, Ser. No. 526,117

Int. Cl.² H02M 7/23, 7/21

U.S. Cl. 321—47 2 Claims



1. A full wave active rectifying circuit comprising

a first transformer having a ferrite magnetic core and a winding with a center tap and two ends for supplying high frequency alternating-current input voltage with a frequency between 20 and 50 kilohertz,

a second transformer having a common magnetic core made of ferrite material and only four magnetically coupled windings including first and second pairs of opposite winding polarity primary and secondary windings, one end of said first pair of primary and secondary windings being connected together and to one end of said first transformer winding, and one end of said second pair of primary and secondary windings being connected to-

gether and to the other end of said first transformer winding,

first and second substantially alternately conductive silicon junction transistors each connected for inverted mode operation and each having an emitter, a base, a collector and a collector-base junction, said collectors being connected together and defining a first output terminal, the other ends of said first pair of primary and secondary windings being connected respectively to the emitter and base of said first transistor such that voltage blockage is performable by the collector-base junction thereof, the other ends of said second pair of primary and secondary windings being connected respectively to the emitter and base of said second transistor such that voltage blockage is performable by the collector-base junction thereof, and a diode connected between the emitter and collector of each of said first and second transistors with a polarity to conduct in the same direction as said respective transistors, and

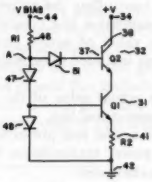
a capacitor connected directly between said first output terminal and a second output terminal which is in turn effectively connected to the center tap of said first transformer winding.

3,940,683

ACTIVE BREAKDOWN CIRCUIT FOR INCREASING THE OPERATING RANGE OF CIRCUIT ELEMENTS

Robert A. Blauschild, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Aug. 12, 1974, Ser. No. 496,554
Int. Cl.² H03F 3/10
U.S. Cl. 323—4 **5 Claims**



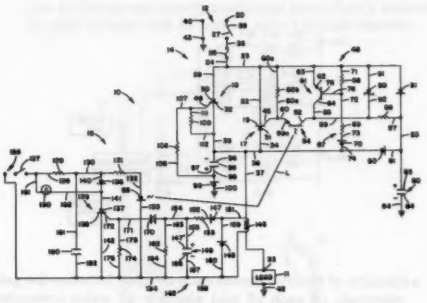
1. In an active circuit for increasing the operating range of semiconductor circuit elements the active circuit being of the type connected between a power supply and a circuit element and including a transistor having a base, emitter and a collector, said transistor having a breakdown voltage, means biasing said transistor for providing a current path through said transistor to supply current to said circuit element and to develop a voltage thereacross and including means for biasing said transistor base and emitter as a forward biased junction for base current flow in a first direction and for biasing said base and collector of said transistor as a reverse biased junction and including unidirectional means for providing a low impedance to base current flow in said first direction, and a high impedance to base current flow in the opposite direction, said supply voltage exceeding a predetermined level to cause said transistor to breakdown, said breakdown voltage across said transistor opposing the supply voltage so that the operating range is increased and the actual voltage applied to the element does not exceed the breakdown voltage of the element said unidirectional means impeding base current flow in said opposite direction to prevent feedback of such current flow whereby said transistor breakdown occurs substantially at the open-base, collector to emitter rating of said transistor.

3,940,684

POWER CONTROLLER

Homer W. Heinzman, Arlington, and Albert J. Marek, Dallas, both of Tex., assignors to LTV Aerospace Corporation, Dallas, Tex.

Filed Feb. 20, 1974, Ser. No. 444,196
Int. Cl.² G05F 3/04
U.S. Cl. 323—9 **6 Claims**



1. A power controller for controlling flow of alternating current from an alternating current input circuit to a load, said controller including:

a power transmission circuit connectible between the input circuit and the load having a master unidirectionally conductive device and a slave unidirectionally conducting device connected reversely in parallel between the input circuit and the load, said devices having control members and remaining conductive, once rendered conductive, during full alternate half cycles of the input voltage;

first means operatively associated with the control member of said master device for rendering said master device conductive during half cycles of voltage of one polarity of the input circuit comprising a capacitor, means for charging said capacitor during each half cycle of a second polarity, and a selectively conductive control means connected in series with and between said control member of said master device and said capacitor for selectively transmitting a potential of said second polarity from said capacitor to said control member of said master devices;

inhibitor means for preventing initiation of conduction of said master device during half cycles of voltage of said one polarity except at substantially the times of zero voltage cross-over between half cycles of said second polarity of the input circuit to half cycles of said one polarity when said control means is conductive; and,

means responsive to the operation of said master device operatively associated with said control member of said slave device for rendering said slave device conductive during each half cycle of input voltage of said second polarity only after each period of conduction of said master device during a half cycle of input voltage of said one polarity.

3,940,685

THYRISTOR-FIRING APPARATUS USING AN ACOUSTIC SURFACE WAVE DEVICE

Yasuo Ebata, Yokohama, Japan, assignor to Tokyo Shibaura Electrical Co., Ltd., Kawasaki, Japan

Filed June 3, 1974, Ser. No. 475,911
Claims priority, application Japan, June 1, 1973, 48-60777
Int. Cl.² H02P 13/14
U.S. Cl. 323—23 **2 Claims**

1. A thyristor firing apparatus comprising:

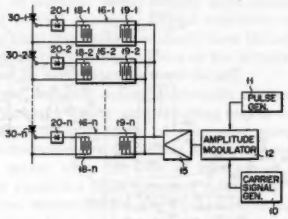
a plurality of series-connected thyristors each having a gate electrode, anode electrode and cathode electrode;

a plurality of acoustic surface wave devices each having a substrate of piezoelectric material and input and output transducer means disposed on said substrate;

control pulse generating means;

carrier signal generating means;

amplitude modulating means for amplitude modulating a carrier signal from said carrier signal generating means with a control pulse from said control pulse generating means;



a plurality of rectifier means each coupled between the gate electrode of each of said plurality of series-connected thyristors and said output transducer means and operative to apply a simultaneous firing signal to the gate electrode of each of said plurality of series-connected thyristor; and

means for coupling said amplitude modulating means to said input transducer means of said plurality of acoustic surface wave devices.

3,940,686
LINEAR OUTPUT BRIDGE CIRCUIT

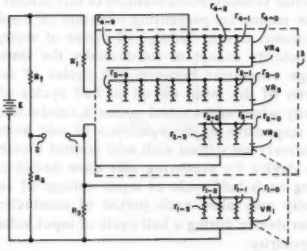
Kozo Tanaka, Fujisawa, and Tetsuyuki Onoda, Yokohama, both of Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 1, 1974, Ser. No. 456,706

Claims priority, application Japan, June 18, 1973, 48-68447; Aug. 6, 1973, 48-92636

Int. Cl.² G01K 7/02

U.S. Cl. 323—75 B **8 Claims**



1. A digital set point circuit comprising:

a pair of input terminals;

a pair of output terminals;

a bridge circuit having at least first, second, third and fourth impedance arms, said first and third impedance arms being connected together and to one of said input terminals, said second and fourth impedance arms being connected together and to the other of said input terminals, said first and second impedance arms being connected together and to one of said output terminals and said third and fourth impedance arms being connected together and to the other of said output terminals, said circuit containing sensor means;

one of said impedance arms comprising at least a most significant digit selector switch for switching between a plurality of digital set point devices; and,

another of said arms comprising a characterizing switch interlocked with said most significant digit selector switch, said characterizing switch for switching a plurality of characterizing devices, each characterizing device having a value associated with each digital set point device for providing an approximation of the operating characteristic of said sensing means to provide a substantially linear output from said bridge.

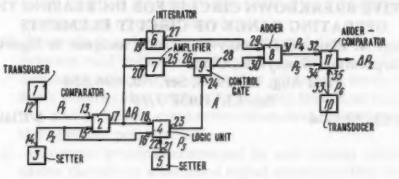
3,940,687
METHOD FOR CONTROLLING ACTIVE POWER DISTRIBUTION IN POWER TRANSMISSION LINES AND A CONTROLLER FOR EFFECTING SAME

Enver Bejukovich Akhundov, ulitsa Volgogradskaya, 21b, kv. 6; Vadim Andreevich Anischenko, ulitsa Gorkogo, 23, kv. 17; Vladimir Vasilievich Petrov, ulitsa Matusevicha, 6, kv. 45, and Petr Stepanovich Semashko, ulitsa Tipografskaya, 3, kv. 65, all of Minsk, U.S.S.R.

Filed May 2, 1974, Ser. No. 466,186

Int. Cl.² G05F 1/66

U.S. Cl. 323—101 **6 Claims**



1. A method for controlling the active power flow distribution in a power transmission line comprising the steps of:

a. presetting the value of active power flow in a power transmission line intended to be maintained in the process of controlling;

b. measuring the actual value of the active power flow in said power transmission line;

c. comparing said actual and preset values of active power flows in said power transmission line and deriving the difference therebetween;

d. converting the difference between said actual and preset values of active power flows in said power transmission line into the nearest maximum extrapolated difference between the preset and actual values of active power flow;

e. adding to obtain the sum of the nearest maximum extrapolated difference between the actual and preset values of active power flow thus obtained and the preset value of active power flow;

f. setting the permissible value of active power flow in said power transmission line to ensure stable operation of the power distribution system;

g. comparing said sum of comprised of the nearest maximum extrapolated difference between the actual and preset values of active power flow and the preset value of active power flow to said permissible value of active power flow in said power transmission line;

h. carrying out a proportional-plus-integral control of active power flow if said sum of the nearest maximum extrapolated difference between the actual and preset active power flow and the preset value of active power flow is greater than said permissible value of active power flow in said power transmission line, or alternately effecting an integral control of the active power flow if said sum of the nearest maximum extrapolated difference between, the actual and preset values of the active power flow and the preset value of actual power

flow is smaller than said permissible value of active power flow in the said power transmission line.

3,940,688

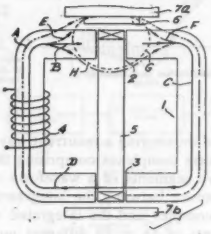
DEVICE FOR TESTING THE MAGNETIC PROPERTIES OF A MAGNETIC MATERIAL

Jean-Pierre Lazzari, Montfort L'Amaury, and Jean-Yves Valet, Beauchamp, both of France, assignors to Commissariat a l'Energie Atomique, Paris and Compagnie Internationale pour l'Informatique, Les Clayes Sous Bois, both of, France

Filed Sept. 30, 1974, Ser. No. 510,318

Int. Cl.² G01R *33/12*

U.S. Cl. 324—34 R **7 Claims**



1. A device for testing the magnetic properties of a test sample comprising a pair of U-shaped cores of magnetic material supported with their respective ends in an aligned and spaced relation to form a magnetic circuit, means for establishing an alternating flow of magnetic flux in said circuit, coil means extending through both of the gaps between the corresponding ends of said cores and arranged so that the magnetic flux passing through the coil means in one of said gaps cancels the effect of the magnetic flux passing through the coil means in the other gap, and means for supporting said test sample relative to said cores so that said test sample receives a portion of the flux passing through one of said gaps and establishes a circuit for said portion of said flux including the coil means in said latter gap to induce a voltage in said coil means and thus enable the magnetic properties of said test sample to be determined.

3,940,689

COMBINED EDDY CURRENT AND LEAKAGE FIELD DETECTOR FOR [illegible] BORE PIPING USING A UNIQUE MA[illegible]IZER CORE STRUCTURE

Wade M. Johnson, Jr., Los Alamos, N. Mex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 14, 1974, Ser. No. 469,935

Int. Cl.² G01R *33/12*

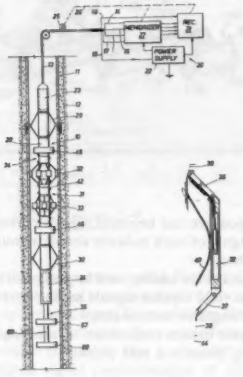
U.S. Cl. 324—37 **14 Claims**

1. Pipe-inspection apparatus adapted for locating magnetically-anomalous defects in or on either the interior or exterior walls of a string of well-bore piping having a known minimum internal diameter, a known relative magnetic permeability and a known transverse cross-sectional metal area, and comprising:

an elongated body adapted for suspension in such a piping string from a well-logging cable and including upper and lower longitudinally-spaced pole pieces respectively having a maximum outer diameter somewhat less than said known internal piping diameter and magnetically coupled to the opposite ends of an elongated reduced-diameter core member of a magnetic metal having a relative magnetic permeability no greater than said known piping permeability and a transverse cross-sectional metal area less than said known piping metal area;

flux-inducing means adapted for establishing a longitudinally-oriented unidirectional magnetic flux along an incremental portion of such well-bore piping located between said upper and lower pole pieces and including a magnetizing coil coaxially wound around said core member;

eddy-current inducing means adapted for establishing eddy currents along and adjacent to the interior wall of said incremental piping portion and including an electrical oscillator, and a plurality of output coils respectively coupled to said oscillator and cooperatively arranged at circumferentially-spaced intervals around said core member for being operatively positioned immediately adjacent to said interior wall to induce eddy currents therein;



defect-sensing means including a plurality of differentially-wound pairs of detecting coils cooperatively arranged at circumferentially-spaced intervals around said core member for being operatively positioned immediately adjacent to said interior wall to simultaneously detect flux-leakage variations as well as eddy-current variations appearing thereon and caused by magnetically-anomalous defects in said incremental piping portion during the movement of said detecting coils therethrough; and

defect-responsive circuit means operatively coupled to said detecting coils and cooperatively arranged for providing first and second output signals in response to said flux-leakage variations and said eddy-current variations respectively.

3,940,690

MULTI-PROBE FLUX LEAKAGE TESTING APPARATUS USING SKEWED PROBES

Peter J. Suhr, Garden City, and Edward D. Spierer, Belle Harbor, both of N.Y., assignors to Magnetic Analysis Corporation, Mount Vernon, N.Y.

Filed Aug. 13, 1974, Ser. No. 496,926

Int. Cl.² G01R *33/12*

U.S. Cl. 324—37 **10 Claims**

1. Multi-probe flux leakage testing apparatus for detecting flaws in an object relatively moving longitudinally and rotationally with respect to the probes which comprises

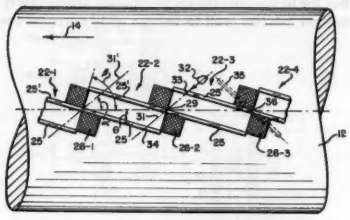
a. means for producing a steady state magnetic field in said object in the test region thereof,

b. a plurality of leakage-flux probes for producing respective signal outputs having positive and negative excursions corresponding to flaws passing thereby in said test region,

c. said probes each including a channel-shaped core of magnetic material of generally U-shaped cross-section and having spaced sides which are long compared to the thickness thereof and a coil encircling the core for producing said signal outputs,

d. said probes being arranged in succession along the longitudinal path of travel of a said object and skewed with respect to said longitudinal path of travel with an end of one probe adjacent an end of the next probe respectively,

e. means for rectifying and combining the positive portions of the signals from said probes and rectifying and combining the negative portions of the signals from said probes



to yield positive and negative signals corresponding to the largest signal of each polarity simultaneously occurring in said probes,

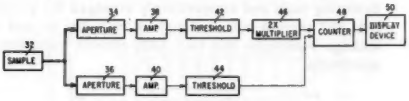
f. adding means for adding said largest positive and negative signals to yield bipolar signals having corresponding positive and negative excursions,

g. and circuit means responsive to said bipolar signals for indicating flaws in a said object.

3,940,691
PARTICLE ANALYZER OF THE COULTER TYPE INCLUDING COINCIDENCE ERROR CORRECTION CIRCUITRY

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Feb. 19, 1974, Ser. No. 443,428
Int. Cl.² G01N 27/00
U.S. Cl. 324—71 CP **19 Claims**



1. In a particle analyzer subject to coincidence errors in counting particle pulses, the combination including:

a first sensing zone arrangement for generating a first train of particle pulses having a first number of particle pulses in response to passage through said sensing zone of a sample containing a plurality of particles to be counted,

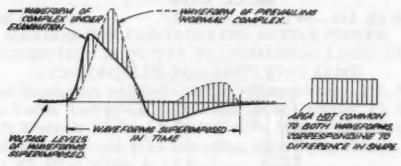
generating means for generating a second train of particle pulses having a second number of particle pulses and having a specific relationship to said first train of particle pulses defined by one of the sample volume, sample dilution and sensing zone volume for said first sensing zone arrangement, and

circuit means coupled to said first sensing zone arrangement and said generating means, for mathematically changing at least one of said first number of particle pulses in said first train of pulses and said second number of particle pulses in said second train of pulses, and second circuit means coupled to said first circuit means operative to accumulate said number of first and second particle pulses in said first and second trains of particle pulses for producing an error corrected particle pulse count.

3,940,692
APPARATUS FOR MONITORING RECURRENT WAVEFORMS

James McEwan McIntyre Neilson, Edinburgh, Scotland, assignor to The University of Edinburgh, Edinburgh, Scotland, a part interest

Filed Dec. 14, 1973, Ser. No. 424,815
Claims priority, application United Kingdom, Dec. 15, 1972, 48106/72
Int. Cl.² G01R 23/16
U.S. Cl. 324—77 R **33 Claims**

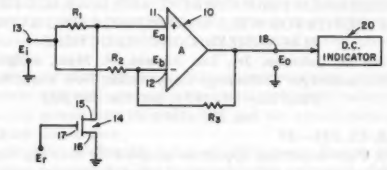

WAVEFORM OF COMPLEX UNDER EXAMINATION
WAVEFORM OF PREVAILING NORMAL COMPLEX
WAVEFORMS SUPERIMPOSED IN TIME
AREA NOT COMMON TO BOTH WAVEFORMS, CORRESPONDING TO DIFFERENCE IN SHAPE
VOLTAGE LEVELS OF WAVEFORMS SUPERIMPOSED

1. A method of monitoring a recurrent waveform to detect abnormal waveform complexes comprising the steps of integrating successive segments of a waveform complex, determining the difference between the integrated value of each segment in the complex and the integrated values of corresponding segments of $(p + 1)$ different normal waveform complexes, where p is an integer, to provide $(p + 1)$ sets of difference signals, quantitatively summing the difference signals associated with each normal waveform and producing a signal and/or record to indicate an abnormal complex if the total sum of the magnitudes of the difference signals associated with a first normal waveform complex exceeds a first threshold level and the sums of the magnitudes of the p other difference signals are not less than a second threshold level for each of the p other normal waveform complexes.

3,940,693
PHASE SENSITIVE DETECTOR

Neil L. Brown, Falmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1974, Ser. No. 517,699
Int. Cl.² H03D 13/00
U.S. Cl. 324—83 A **2 Claims**



1. A phase sensitive detector comprising, in combination

an amplifier having a non-inverting input terminal, an inverting input terminal and an output circuit;

a first resistor having one side thereof connected to said non-inverting terminal;

a second resistor having one side thereof connected to said inverting terminal;

a third resistor connected between said output circuit and said inverting terminal to provide negative feedback for said amplifier, said second and third resistors having equal values;

means for connecting a first signal to both other ends of said first and second resistors; and

means for grounding said non-inverting terminal whenever a second signal has a particular polarity whereby the

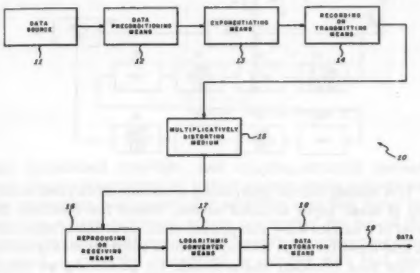
signal appearing in the output circuit of said amplifier has an average value which is indicative of the phase between said first and second signals.

3,940,694

APPARATUS AND METHOD FOR REDUCING MULTIPLICATIVE GAIN VARIATION DISTORTIONS IN DATA RECORDING AND TRANSMISSION CHANNELS

Robert Price, Lexington, and John W. Craig, Sudbury, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 193,898, Oct. 29, 1971. This application June 26, 1974, Ser. No. 483,340
Int. Cl.² H04B 1/00, 1/10
U.S. Cl. 325—42 37 Claims



1. In combination for use with a data source for providing a sequence of data items

accumulator means responsive to said sequence of data items for algebraically accumulating said data items in accordance with a preconditioning function thereby forming a sequence of output partial sums respectively,

exponentiating means coupled to the output of said accumulator means and responsive to said sequence of output partial sums for sequentially providing an essentially exponential function thereof by sequentially raising a base to a power proportional to said output partial sums respectively, thereby providing a sequence of first signals respectively,

said first signals being subject to multiplicative distortions which are filterable with respect to said data items thereby providing a sequence of distorted first signals,

logarithmic converter means responsive to said sequence of distorted first signals for sequentially providing a logarithmic function thereof, respectively, inverse to said exponential function, thereby providing a sequence of second signals respectively,

said logarithmic converter means converting said multiplicative distortions to additive distortions,

subtractor means coupled to said logarithmic converter means for providing algebraic differences between said second signals in accordance with a function inverse to said preconditioning function, thereby performing a substractive operation providing a sequence of third signals representative of said sequence of data items, respectively, with said additive distortions substantially filtered therefrom by said subtractive operation, and

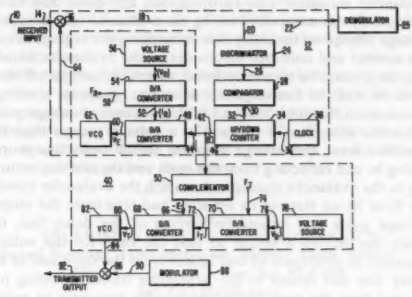
memory means in said subtracter means for storing at least one of said second signals occurring prior to the currently occurring of said second signals thereby providing signals for said subtracter means to provide said algebraic differences.

3,940,695

DOPPLER CORRECTION OF TRANSMISSION FREQUENCIES

Louis Sickles, II, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,764
Int. Cl.² H04B 7/00
U.S. Cl. 325—63 6 Claims



1. Apparatus for pre-compensating for doppler shift in a signal to be transmitted to a remote station comprising:

a. means, receptive of a signal from said remote station, said received signal deviating in frequency from a predetermined reception frequency due to doppler shift, for providing a digital signal representative of said frequency deviation;

b. digital multiplier means, responsive to said representative signal, for generating a doppler correction signal indicative of said frequency deviation multiplied by the negative of the ratio of a predetermined transmission frequency for said transmitted signal to said predetermined reception frequency; and

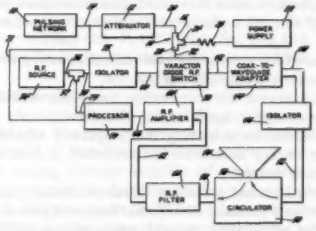
c. means, responsive to said doppler correction signal and to said signal to be transmitted, for translating in frequency said signal to be transmitted according to said doppler correction signal.

3,940,696

HIGH FREQUENCY, SHORT PULSE, BAND LIMITED RADAR PULSE GENERATOR FOR ULTRASHORT RANGE RADAR SYSTEMS

Louis L. Nagy, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1974, Ser. No. 525,004
Int. Cl.² H04B 1/04
U.S. Cl. 325—141 2 Claims



1. A band-limited RF pulse generator for ultrashort range pulse radar systems comprising: an RF switch, said switch including a varactor diode; means for generating a continuous RF signal: means coupling the RF signal to the RF switch, the RF switch normally attenuating the RF signal and being re-

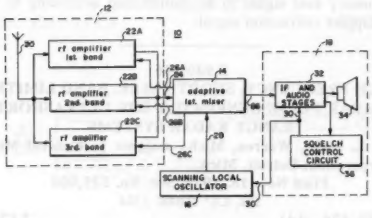
sponsive to a voltage supplied to the varactor diode for transmitting the RF signal; a voltage pulse generator, said voltage pulse generator including an avalanche transistor having base, emitter and collector electrodes, means for biasing the avalanche transistor for operation in its avalanche region, the avalanche transistor switching from an off state to an on state when the voltage across its emitter and collector electrodes exceeds a specified level, a delay line having a first end coupled to the avalanche transistor and the means for biasing the avalanche transistor and an open end, the delay line being charged by the means for biasing the avalanche transistor, the voltage charge on the delay line comprising the voltage across the emitter and collector electrodes of the avalanche transistor, the avalanche transistor being switched from its off state to its on state to discharge the delay line, generate a voltage transient on the delay line and initiate an output voltage pulse when the delay line is charged to a voltage greater than the specified level, the voltage transient on the delay line propagating to and reflecting from the open end thereof and returning to the avalanche transistor to switch the avalanche transistor from its on state to its off state and terminate the output voltage pulse and initiate recharging of the delay line, the delay line having a length so that the time for the voltage transient to propagate to and reflect from the open end of the delay line and return to the avalanche transistor being just greater than the time for the avalanche transistor to switch from its off state to its on state; and means coupling the voltage pulses from the voltage pulse generator to the varactor diode, whereby the voltage pulses drive the RF switch to transmit the RF to generate ultrashort pulse, band-limited RF pulses.

3,940,697

MULTIPLE BAND SCANNING RADIO

Eugene L. Morgan, Dix Hill, N.Y., assignor to Hy-Gain Electronics Corporation, Lincoln, Nebr.

Filed Dec. 2, 1974, Ser. No. 528,920
Int. Cl.² H04B *1/26*
U.S. Cl. 325—333 **9 Claims**



1. Radio apparatus comprising:

radio frequency means for receiving radio frequency energy through any of a plurality of different radio frequency paths;

mixer means for converting said radio frequency energy to intermediate frequency energy;

processing means for converting said intermediate frequency energy to audio sound vibrations;

control means for selecting the frequency of radio frequency energy that is to be converted to intermediate frequency energy;

said control means including local oscillator means for generating a plurality of different frequency local oscillations for application to said mixer means and control signals indicating the one of said different frequency local oscillations to be transmitted to said mixer means;

said mixer means including means for selecting one of said radio frequency paths in said radio frequency means in response to said control signals from said local oscillator means;

said mixer means including mixer input conductor means for carrying local oscillations to said mixer and a plurality of different possible conductive paths from said local oscillator means to said mixer input conductor means for said local oscillations;

some of said conductive paths having a different impedance than other of said conductive paths; and

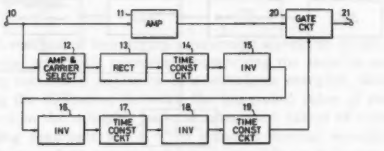
means for selecting the path said local oscillations take to said mixer input conductor means in response to said signals.

3,940,698

MUTING CIRCUIT

Yasuo Itoh, Tokyo, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed May 17, 1973, Ser. No. 361,218
Claims priority, application Japan, May 24, 1972, 47-51496
Int. Cl.² H04B *1/10*
U.S. Cl. 325—348 **15 Claims**



1. A muting circuit comprising a cascade of circuits including at least: input terminal means; means for detecting the level of a carrier wave component in an input signal appearing at said input terminal means; first time constant means having a first time constant characteristic for producing an output thereform with a first predetermined time constant in response to the detection of a predetermined signal strength level in the output of said level detecting means; second time constant means having a second time constant characteristic for producing an output thereof with a second time constant in response to the output of said first time constant means when a carrier wave component is detected at the input terminal means, the duration of said second time constant being longer than the duration of said first time constant, means for making said second time constant substantially zero when a carrier wave component is not detected by said level detecting means; third time constant means having a third time constant characteristic for producing an output therefrom with a third time constant in response to the output supplied from said second time constant means, the duration of said third time constant being longer than the duration of the second time constant; and means including a gate circuit coupled to said input terminal means and operating in response to the output signal supplied from said third time constant means to pass or block the input signal, said third time constant means holding said gate circuit in a conductive state to pass the signal during the period of time corresponding to the difference between the third and second time constants.

3,940,699

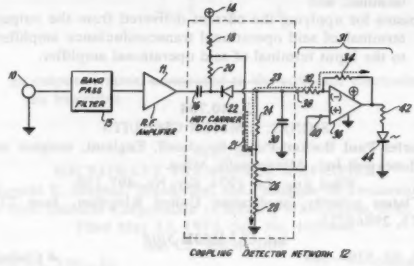
RADIO FREQUENCY ENERGY SIGNALLING APPARATUS

Djangar Emgushov, Philadelphia, Pa., assignor to Jerrold Electronics Corporation, Horsham, Pa.

Filed Jan. 14, 1975, Ser. No. 541,050
Int. Cl.² H04B *17/00*; G08B *21/00*
U.S. Cl. 325—363 **5 Claims**

1. In combination in radio frequency signal detecting apparatus for signalling the incidence of radio frequency energy of a predetermined spectrum exceeding a preselected adjustable threshold, an operational amplifier having inverting and noninverting input terminals and an output terminal, said operational amplifier including a difference amplifier having inverting and noninverting input terminals and an output terminal,

said noninverting input terminal of said difference amplifier corresponding to said noninverting input terminal of said operational amplifier and said output terminal of said difference amplifier corresponding to said output terminal of said operational amplifier, a first resistor connected between the inverting input terminals of said operational amplifier and said difference amplifier and a second resistor connector between said inverting input and output terminals of said difference amplifier, a light emitting diode connecting to the output of said operational amplifier, and a coupling-detector network connected to the inverting and noninverting input terminals of



said operational amplifier, said coupling-detector network including an input terminal, a third resistor and a potentiometer connecting said operational amplifier inverting input terminal to a fixed potential, means connecting the tap of said potentiometer to said operational amplifier noninverting input terminal, a capacitor connected in parallel with said third resistor and potentiometer, a detector diode connected between said coupling-detector network input terminal and the inverting input terminal of said operational amplifier, a potential source, and a fourth resistor connecting said potential source to the junction between said third resistor and said potentiometer.

3,940,700

METHOD AND INSTALLATION FOR THE DETECTION OF A SOURCE GENERATING ELECTRO-MAGNETIC OSCILLATIONS

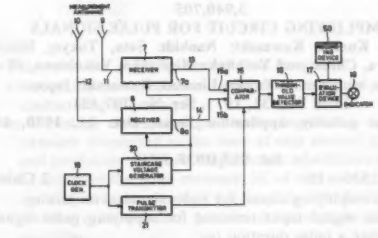
Markus Fischer, Bern, Switzerland, assignor to Paul Haas, Bern, Switzerland

Filed Aug. 10, 1973, Ser. No. 387,454

Claims priority, application Switzerland, Aug. 15, 1972, 12079/72

Int. Cl.² H04B 1/16

U.S. Cl. 325—363 **14 Claims**



1. A method for detecting the presence of an unauthorized concealed source of electromagnetic energy comprising the steps of:

suspecting a location of a concealed source of electromagnetic energy;

receiving at a first location adjacent the suspected location of said concealed source the electromagnetic energy from said source;

measuring the magnitude of the field intensity of the electromagnetic energy of said source received at the first location;

randomly selecting a second location spatially separated from the first location;

receiving at the randomly selected second location the electromagnetic energy from said source;

measuring the magnitude of the field intensity of the electromagnetic energy of said source received at the second location;

detecting the difference between the field intensity magnitude measured at the first location and the field intensity magnitude measured at the second location; and

triggering an indication when the difference between the magnitudes of field intensities exceeds a predetermined magnitude greater than zero.

3,940,701

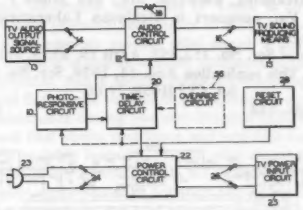
TELEVISION REMOTE CONTROL DEVICE

Edward Novitski, 1690 26th East, Eugene, Oreg. 97403

Filed Jan. 20, 1975, Ser. No. 542,494

Int. Cl.² H04B 1/16

U.S. Cl. 325—392 **12 Claims**



11. A method for controlling a television receiver which produces an audio output, said method comprising:

a. muting the audio output automatically in response to the receipt of a first light signal;

b. measuring the time following the receipt of the first light signal; and

c. entirely disabling the television receiver automatically if a predetermined period of time is measured before a second light signal is received.

3,940,702

AUTOMATICALLY PRESETTING CHANNEL SELECTING SYSTEM

Jun'Ichi Yoshimura, and Tatsumi Watabe, both of Yokohama, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1974, Ser. No. 512,551

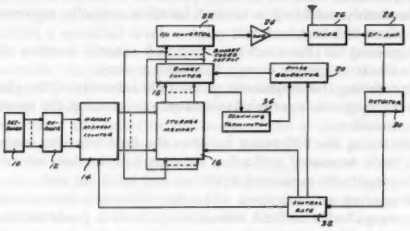
Claims priority, application Japan, Nov. 7, 1973, 48-125195

Int. Cl.² H04B 1/32

U.S. Cl. 325—464 **4 Claims**

1. A channel selecting system for use in a receiver or the like having a first voltage controlled tuning element capable of tuning in a first frequency range and a second voltage control tuning element capable of tuning in a second frequency range, said system comprising means for detecting the presence of a broadcast signal at a selected frequency, means for generating a first data signal corresponding to the voltage level necessary to condition one of said elements to tune said frequency, storage means, control means operably connected to said detecting means and said storage means for actuating said storage means to store said first data signal, means for generating a voltage in accordance with said first data signal, a selected one of said tuning elements being conditionable by

said voltage to select a frequency in accordance therewith, a read-only memory having stored therein second data signals corresponding to voltages capable of conditioning each of said first and second tuning elements to the upper and lower limits



of their respective frequency ranges, means for comparing said first data signals with said second data signals and for generating an equality signal in the event said signals are equal and means for selecting one of said first and said second tuning elements in accordance with said equality signal.

3,940,703

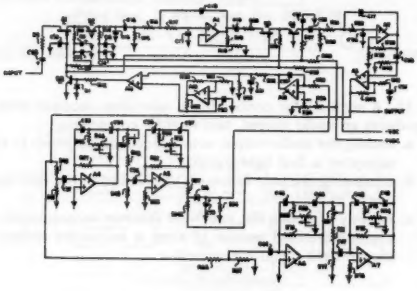
INTERMODULATION DISTORTION ANALYZER

Norris C. Hekimian, Rockville, Md., and James F. Turner, Oakton, Va., assignors to Hekimian Laboratories, Inc., Rockville, Md.

Division of Ser. No. 352,552, April 19, 1973, Pat. No. 3,862,380. This application Aug. 14, 1974, Ser. No. 497,482

Int. Cl.² H03B 21/00

U.S. Cl. 328—144 6 Claims



1. An RMS detector circuit comprising:

an input terminal;

an output terminal;

a squaring circuit for receiving a first signal and providing a squared signal having an amplitude which is proportional to the square of the amplitude of said first signal;

gain control means for automatically adjusting signals applied to said input signal terminal to a signal at a substantially constant level, said gain control means including feedback means for maintaining said substantially constant level an inverse function of signal amplitude at said output signal terminal;

means for applying said signal at substantially constant level to said squaring circuit as said first signal; and

low pass filter means for eliminating all but DC components in the squared signal from said squaring circuit and applying said DC components to said output signal terminal;

wherein said gain control means comprises:

a high gain operational amplifier having an input terminal and an output terminal which provides an inverted version of the signal at said input terminal;

an operational transconductance amplifier having an input signal terminal, a bias control terminal, and an output terminal which provides an output current proportional to the product of the voltage at said input signal terminal times the current delivered to said bias control terminal;

means connecting the output signal from the output terminal of said operational amplifier to the input signal terminal of said operational transconductance amplifier;

a voltage to current converter for providing a control current proportional to the voltage at the output terminal of said RMS detector;

means for applying said control current to said bias control terminal; and

means for applying the current delivered from the output terminal of said operational transconductance amplifier to the input terminal of said operational amplifier.

3,940,704

SIGNAL LIMITER CIRCUITS

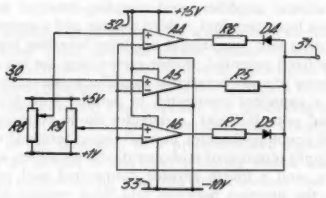
Charles Paul Bockett-Pugh, Bracknell, England, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 14, 1974, Ser. No. 497,239

Claims priority, application United Kingdom, June 22, 1973, 29865/73

Int. Cl.² H03K 5/08

U.S. Cl. 328—169 4 Claims



1. A dual limiter circuit comprising first and second operational amplifiers having their positive inputs fed with the two limiting voltages, a third operational amplifier having its positive input fed with the limiter circuit input voltage, a respective impedance for each amplifier connecting its amplifier output to the limiter circuit output, and a feedback connection from the limiter circuit output to the negative inputs of all three amplifiers, the arrangement being such that, whatever the value of the circuit input voltage, one of the amplifiers operates in its linear region and controls the circuit output voltage while the other two amplifiers are saturated in opposite senses.

3,940,705

AMPLIFYING CIRCUIT FOR PULSE SIGNALS

Shoichi Kurita, Kawasaki; Naohide Sata, Tokyo; Hideki Ogawa, Chiba, and Yoshitaka Hiratsuka, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 31, 1971, Ser. No. 207,451

Claims priority, application Japan, Dec. 21, 1970, 45-115431

Int. Cl.² H03F 3/60

U.S. Cl. 330—16 2 Claims

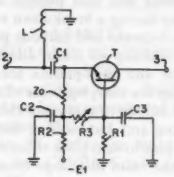
1. An amplifying circuit for pulse signals, comprising

a pulse signal input terminal for supplying pulse signals having a pulse duration *tw;*

a delay line having a predetermined characteristic impedance and a delay time *td*, the pulse duration *tw* being less than 2*td;*

a transistor having a grounded base electrode, an emitter electrode coupled to the input terminal via the delay line and a collector electrode;

an impedance having the value of the characteristic impedance of the delay line connected between the emitter and base electrodes of the transistor; and



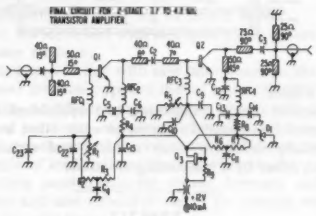
an output terminal connected to the collector electrode of the transistor.

3,940,706

MICROWAVE TRANSISTOR AMPLIFIER

Ronald E. Stegens, Brookville, Md., assignor to Communications Satellite Corporation (Comsat), Washington, D.C.

Filed May 13, 1974, Ser. No. 469,444
Int. Cl.² H03F 3/04
U.S. Cl. 330—21 **7 Claims**



1. A broadband, low noise microwave transistor amplifier comprising:

a first bipolar transistor connected as a first common emitter amplifier stage,

an input distributed parameter impedance matching network connected to the base of said first transistor and having a source admittance selected to minimize the noise measure, *M*, of said first transistor defined by the equation

$$M = \frac{F - 1}{1 - \frac{1}{(G)}}$$

where *F* is the noise figure and *G* is the gain,

a second bipolar transistor connected as a second common emitter amplifier stage,

an interstage distributed parameter impedance matching network connected to the base of said second transistor and producing a second stage source admittance selected to minimize the noise measure, M, of said second transistor over at least a part of the amplifier bandwidth while yielding a net constant gain for the composite two stage amplifier,

said interstage network connecting the collector of said first transistor to the base of said second transistor and consisting of a short transmission line, and

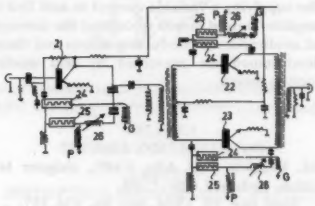
an output matching network connected to the collector of said second transistor which produces a constant output impedance over a broad frequency range.

3,940,707

ELECTRONIC DEVICES FOR THE AUTOMATIC CONTROL OF GAIN AND ROLL-OFF IN AMPLIFIERS

Rafael Herrera Fernandez, Madrid, Spain, assignor to Industrias Rumbo, S.A., Madrid, Spain

Filed June 5, 1974, Ser. No. 476,465
Claims priority, application Spain, June 6, 1973, 415581
Int. Cl.² H03G 3/30
U.S. Cl. 330—29 **2 Claims**



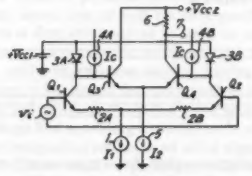
1. In an electronic circuit for the automatic control of gain and roll-off in amplifiers having input and output terminals and feedback therebetween especially wide-band amplifiers for use in the primary line of tele-distribution systems, the improvement wherein the feedback network includes a first pure ohmic resistance, the value of which is automatically variable within preestablished limits as a function of the level of a variable intensity current pilot signal, a first capacitor coupling one side of said first ohmic resistance to the amplifier output terminal, and a second capacitor coupling the other side of said first ohmic resistance to the amplifier input terminal, an inductance having one side coupled between said one side of said first ohmic resistance and said first capacitor for applying a variable intensity current pilot signal to said first ohmic resistance, a return path for said variable intensity current pilot signal coupled between said other side of said first ohmic resistance and said second capacitor to furnish a control current to said first ohmic resistance causing it to change its ohmic value to achieve control of gain and roll-off, a second negative temperature coefficicent ohmic resistance in series with an inductance in the feedback network and means provided to inject a pilot signal of lower frequency into said second ohmic resistance, said second ohmic resistance and said serially connected inductance being connected in parallel with said first ohmic resistance.

3,940,708

GAIN CONTROL CIRCUIT

Takao Sumi, Tokyo, and Masayuki Hongu, Komae, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 11, 1975, Ser. No. 549,080
Claims priority, application Japan, Feb. 14, 1974, 49-18026
Int. Cl.² H03G 3/30
U.S. Cl. 330—29 **11 Claims**



1. A gain control circuit, comprising:

first differential amplifier means coupled to a first constant current source, said first differential amplifier means

having input means for receiving an input signal differentially applied thereto and output means;

second differential amplifier means coupled to a second constant current source, said second differential amplifier means having input means connected to said first differential amplifier output means and output means for producing an amplified output signal;

unidirectional conducting means connected to said first differential amplifier output means as load impedance therefor; and

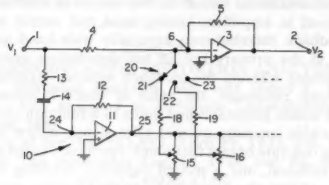
means for supplying a variable current to said first differential amplifier output means to control the current flowing in said unidirectional conducting means and thereby vary the load impedance presented by said unidirectional conducting means.

3,940,709

EQUALIZATION CIRCUIT

Alastair M. Heaslett, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Dec. 19, 1974, Ser. No. 534,357
Int. Cl.² H03F 1/36
U.S. Cl. 330—107 **13 Claims**



1. An equalization circuit comprising;

an input;

amplifying means connected to said input;

filter circuit means having an output connected to said input for providing a signal varying in amplitude with frequency at its output;

a plurality of adjustable resistances corresponding to a plurality of operating ranges connected to the output of said filter circuit means for adjusting the signal amplitude provided by the output; and,

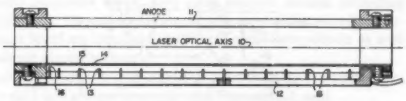
switch means for selectively connecting one of said plurality of adjustable resistances to said amplifying means according to one selected operating range.

3,940,710

ARC CONTROLLED DISCHARGE SYSTEM

J. Jacques Lemay, Ancienne-Lorette, Canada, assignor to The Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed June 20, 1973, Ser. No. 371,729
Claims priority, application Canada, Jan. 15, 1973, 161285
Int. Cl.² H01S 3/22, 3/097
U.S. Cl. 331—94.5 PE **19 Claims**



8. In an excitation system for a transversely excited atmospheric pressure carbon dioxide gas laser of the type having an optical resonator with an optical axis, an anode positioned on one side of the optical axis of said laser and extending therealong, and a plasma forming plate and a cathode positioned on the opposite side of the optical axis and extending therealong, said cathode including a plurality of cathode pins extending toward said plasma forming plate, there being a hole in said plasma forming plate adjacent each of said cathode pins, the improvement comprising providing a subsidiary spark gap between said cathode and said plasma forming plate, said subsidiary spark gap having a breakdown voltage less than the breakdown voltage between said cathode pins and said plasma forming plate for forming an initial electrical discharge between said cathode and said plasma forming plate at said subsidiary spark gap for carrying most of the main discharge current from said cathode to said plate through said gap as an arc while preventing arcs but causing small glow discharges from said cathode pins to said plate to increase the uniformity and reliability of the main discharge from said plate to said anode.

3,940,711

CYLINDRICAL LASER RESONATOR

Lee W. Casperson, Los Angeles, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 21, 1974, Ser. No. 453,603
Int. Cl.² H01S 3/082
U.S. Cl. 331—94.5 C **1 Claim**

1. In a laser:

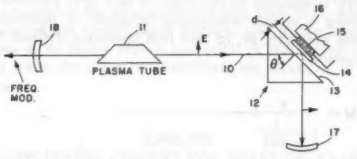
a resonant cavity comprising two cylindrical resonators disposed in parallel relation to each other each having partially reflective inner surfaces and separated from each other by a conducting electrode.

3,940,712

MODULATION TECHNIQUES FOR LASERS

Matthew B. White, 258 Forest Ave., Cohasset, Mass. 02025

Filed Apr. 11, 1974, Ser. No. 460,245
Int. Cl.² H01S 3/10
U.S. Cl. 331—94.5 M **9 Claims**



1. Apparatus for frequency modulating a laser beam produced by a laser having a cavity of fixed dimensions comprising, in combination

an optical prism positioned within said cavity in the path of said laser beam,

the orientation of said prism and its index of refraction being such that said laser beam enters a first face of said prism, is incident on and experiences total internal reflection from a boundary surface of said prism when the medium in contact with this boundary surface is air and exits from a second face of said prism,

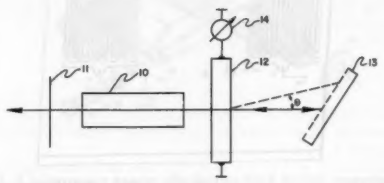
said laser beam, while experiencing such reflection, emerging from said boundary surface and traversing an external path before re-entering said boundary surface; and

means for altering the optical length of said external path thereby to change the phase of the laser beam exiting from said second face of said prism and the frequency of the laser beam leaving said cavity.

3,940,713
STIMULATED BRILLOUIN SCATTERED (SBS) TUNED LASER

Richard Swart Hughes, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 11, 1974, Ser. No. 522,387
Int. Cl.² H01S 3/10
U.S. Cl. 331—94.5 C **3 Claims**



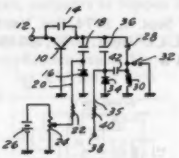
1. A rapidly tunable laser comprising;
a laser medium for producing an output beam;
an output mirror in line with said laser beam on one side of said laser medium;
reflective means in line with said laser beam on the side of said laser medium opposite that of said output mirror for reflecting said laser beam capable of responding to the angle of incidence of a beam thereon such that the reflected wavelength of the incident beam is determined by the angle of incidence on the reflective means;
piezoelectric semi-conductor means between said laser medium and said reflective means for causing said laser beam to angle scan;
means for creating an electric field within said semiconductor along a given direction in said semi-conductor;
means for causing stimulated Brillouin scattering in the semi-conductor;
and means for continuously varying either the magnitude or direction of the electric field in the semi-conductor so as to affect a change in the angle of the scattering;
said reflective means being responsive to the angle of incidence thereon of the laser beam, thereby determining the reflective wavelength and the frequency of the output laser beam from said output mirror.

3,940,714
AFC CIRCUIT WITH IMPROVED SENSITIVITY

Shoji Sato, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1974, Ser. No. 525,869
Claims priority, application Japan, Dec. 27, 1973, 49-4915[U]
Int. Cl.² H03B 5/12
U.S. Cl. 331—117 R **1 Claim**

1. In an AFC circuit of a local oscillator or the like of the type having a first variable capacitance element and series connected first and second inductive elements, said inductive elements being connected in parallel with said first variable capacitance element, switch means for short circuiting said second inductive element, a first capacitor, a second variable capacitance element connected in series with said first capacitor, said second variable capacitance element and said first capacitor both being connected in parallel with said series connected inductive elements, the improvement comprising a second capacitor connected between the junction point of said series connected inductive elements and the junction point between said first capacitor and said second variable

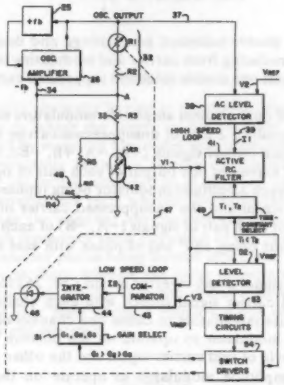


capacitance element so as to eliminate undesirable variations in the AFC sensitivity as the oscillator is switched between bands.

3,940,715
DISTORTION MEASUREMENT SYSTEM

Jack G. S. Lum, Sunnyvale, Calif., assignor to Sound Technology, Inc., Campbell, Calif.

Filed Sept. 25, 1974, Ser. No. 509,118
Int. Cl.² H03B 5/26
U.S. Cl. 331—141 **10 Claims**

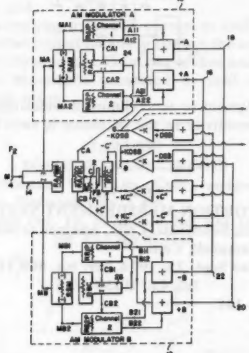


1. Amplitude control apparatus for maintaining constant the output amplitude of an amplifier by a negative feedback loop between the output and an input of the amplifier said negative feedback loop comprising: a high speed feedback control loop including first means for comparing said output amplitude to a first reference voltage and providing a first error signal indicating a difference, voltage divider means between said output and input for precisely determining the negative feedback ratio, said divider means having first and second series resistive portions with a common point connected to said input, one of said resistive portions being responsive to said first error signal to vary its resistance in a manner to change said negative feedback ratio to reduce said error signal, said one resistive portion having an optimum operating range; a low speed feedback control loop including second means for comparing said first error signal to a second reference voltage and providing a second error signal, integrator means for integrating said second error signal and having an output, said other resistive portion of said voltage divider means being responsive to said integrator output to vary its resistance in a manner to change said negative feedback ratio in the same direction as said one resistive portion whereby said one resistive portion is returned to its optimum operating range.

3,940,716
DOUBLE-BALANCED MODULATING AND DEMODULATING APPARATUS

Donald H. Gehring, 3364 Ardley Court, Falls Church, Va. 22041

Filed Sept. 4, 1974, Ser. No. 503,157
Int. Cl.² H03C *1/54;* **H03D** *1/24*
U.S. Cl. 332—43 B **23 Claims**



1. A first double-balanced modulatingg and demodulating circuit for producing from carrier and modulating input signal sources at least one double sideband suppressed carrier signal, comprising

a. a pair of dual-channel amplitude modulators each operable to produce a pair of unsuppressed-carrier amplitude-modulated output signals (+A, −A; +B, −B), the unsuppressed carrier of one output of each pair of signals (+A, +B) of each amplitude modulator being inphase with said carrier signal and the unsuppressed carrier of the other output of each pair of signals (−A, −B) of each amplitude modulator being 180° out-of-phase with said carrier signal;

b. carrier signal phase inverter means (24, 26) for connecting said carrier signal source with each channel of said amplitude modulators to cause one channel of each amplitude modulator to operate on the positive portion of each cycle of said carrier signal and the other channel of each amplitude modulator to operate on the negative portion of each cycle of said carrier signal, thereby permitting full-wave operation of each amplitude modulator;

c. modulating signal phase inverter means (14) for supplying said modulating signal in opposite phases to said amplitude modulating circuits, respectively, thereby causing the envelopes of the outputs (+A, −A; +B, −B) of each of said amplitude modulating circuits, respectively, to be in phase opposition; and

d. first summing means (RS1, RS2) for combining the carrier-in-phase output signal (+A) of a first amplitude modulator with the carrier out-of-phase output signal (−B) of the other amplitude modulator to obtain a first double sideband output signal (+DSB) from which the carrier signal has been cancelled.

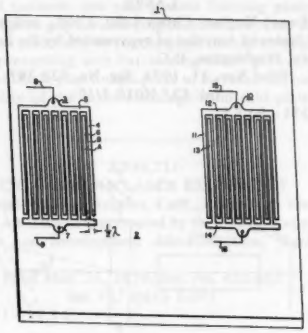
3,940,717
ACOUSTIC SURFACE WAVE DEVICES USING TL_3TAS_4 AND TL_3TASE_4 CRYSTALS

Thelma J. Isaacs, Murrysville, and Robert W. Weinert, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1975, Ser. No. 540,193
Int. Cl.² H03H *9/26, 9/30;* **H01L** *41/08, 41/18*
U.S. Cl. 333—30 R **15 Claims**

8. A method of delaying an electrical signal comprising:

1. passing said signal through a surface wave generating transducer mounted on a surface of a single crystal selected from the group consisting of Tl_3TaS_4, Tl_3TaSe_4 and mixtures thereof, within about 5% of stoichiometric, said surface being suitable for the propagation of surface waves; and

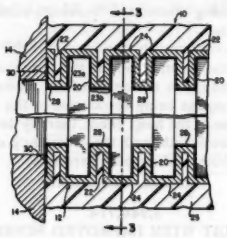


2. receiving said signal from a surface wave receiving transducer mounted on said surface positioned to receive surface waves emanating from said surface wave generating transducer.

3,940,718
FLEXIBLE WAVE GUIDE AND METHOD FOR MAKING SAME

Hugo L. Vilkaitis, Thomaston, Conn., assignor to Tech Systems Corporation, Thomaston, Conn.

Filed Feb. 11, 1974, Ser. No. 441,422
Int. Cl.² H01P *3/14;* **F16L** *11/14, 9/06*
U.S. Cl. 333—95 A **6 Claims**



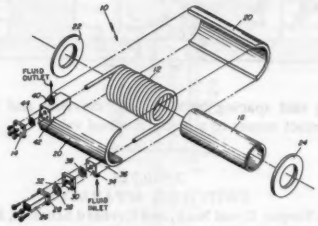
1. A flexible microwave wave guide comprising a highly conductive continuous first layer defining a tube for the propagation of microwaves, said tube having a rectangular cross section and convolutions along its length, said convolutions extending substantially transverse to the direction of propagation of said microwaves, and said convolutions being substantially rectangular in cross section, a continuous convoluted support layer bonded to the outer surface of said first layer, and first coupling means secured to one end of said tube and second coupling means secured to the other end of said tube, the surfaces of the tube contiguous said first and said second coupling means defining and being situated in a plane substantially perpendicular to the longitudinal axis of the tube, said first and second coupling means having passages for the propagation of microwaves, said passage having a cross-sectional size smaller from the cross-sectional size of the tube.

3,940,719

MICROWAVE WAVEGUIDE DISSIPATIVE LOAD COMPRISING FLUID COOLED LOSSY WAVEGUIDE SECTION

Alfred E. Booth, Marlboro, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 25, 1974, Ser. No. 518,019
Int. Cl.² H01P 1/22, 1/26
U.S. Cl. 333—22 F 9 Claims



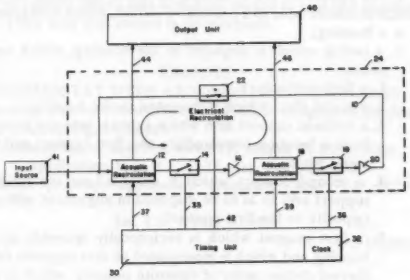
1. A microwave energy dissipative load device comprising:
a lossy section of waveguide transmission line of a poor electrically conductive non-magnetic material;
transition means adapted for coupling said lossy waveguide section to a main waveguide transmission line; and
means for circulating a fluid coolant adjacent to the walls of said lossy waveguide section for removing thermal energy generated by absorption of microwave energy.

3,940,720

RECIRCULATING ELECTRIC AND ACOUSTIC TAPPED DELAY LINE

John B. Harrington, Los Alamitos, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 2, 1974, Ser. No. 466,426
Int. Cl.² H03H 9/26, 9/30, 9/32
U.S. Cl. 333—30 R 8 Claims



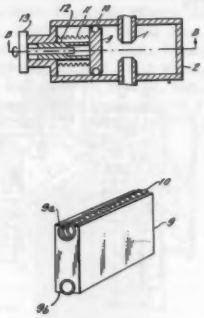
1. A recirculating tapped delay line system comprising
a selected number of acoustic recirculating means each having a selected number of taps;
electrical recirculating means coupling said acoustic recirculating means in series and in a continuous loop; and
switching means coupled in the loop of said electrical circulating means at the output of each acoustic recirculating means for controlling the number of recirculations in each acoustic recirculating means.

3,940,721

CAVITY RESONATOR HAVING A VARIABLE RESONANT FREQUENCY

Yasuaki Kojima; Takayoshi Shinozaki, and Akira Takahashi, all of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Apr. 29, 1975, Ser. No. 572,730
Claims priority, application Japan, May 9, 1974, 49-53078
Int. Cl.² H01P 7/06
U.S. Cl. 333—83 R 4 Claims



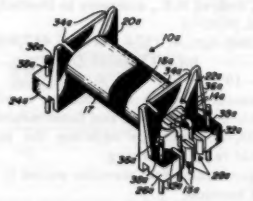
1. A cavity resonator having an adjustably tunable resonant frequency in which the tuning of the resonant frequency is maintained by means of a movable side plate provided within the hollow cavity resonator housing, characterized in that contactor pieces are supported by at least two opposite edges of said movable side plate whereby the contactor pieces slidably engage the adjacent interior surfaces of the housing to obtain high frequency short-circuiting to the cavity housing;
said contactor pieces being formed of metallic wires wound into coil shape wherein the outer diameters of the coils are each no greater than the distance between the opposed side plate edges in which the coil shape metallic wires are mounted.

3,940,722

REED SWITCH RELAY

Thomas E. Fox, Park Ridge; John W. Scannell, Glenview, and Clifford H. Andersen, Park Ridge, all of Ill., assignors to C. P. Clare & Company, Chicago, Ill.

Filed Nov. 8, 1974, Ser. No. 521,951
Int. Cl.² H01H 50/02
U.S. Cl. 335—151 12 Claims



1. A bobbin for a reed switch relay comprising:
a central portion having a longitudinal passageway defined therein for receiving a reed switch of the type having a pair of wire leads extending from opposite ends thereof;
a pair of supporting legs integrally molded with said central portion; and

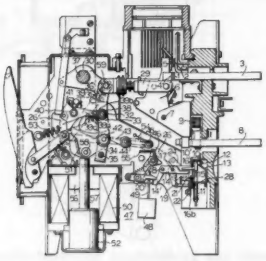
a pair of resilient wire retaining members integrally molded with each of said supporting legs in alignment with said passageway for retaining said wire leads therebetween.

3,940,723

INSTANTANEOUSLY TRIPPING DEVICE FOR CIRCUIT INTERRUPTER

Masao Horikawa, Yamato-kooriyama, Japan, assignor to Terasaki Denki Sangyo Kabushiki Kaisha, Osaka, Japan

Filed May 20, 1974, Ser. No. 471,774
Claims priority, application Japan, May 21, 1973, 48-55593
Int. Cl.² H01H 9/00
U.S. Cl. 335—174 **1 Claim**



1. An instantaneously tripping device operative upon closing a circuit interrupter and comprising instantaneously tripping electromagnet means disposed to encircle a conductor, the electromagnet means including a movable iron core actuatable by a closing latch included in a switching mechanism for a circuit interrupter, through both a locking plate and a releasing plate and a stationary iron core operatively associated with the movable iron core so that, after the completion of the closing operation performed by the switching mechanism, and during the closure of the circuit interrupter, the locking plate locks the movable iron core in its locked position to prevent the movable iron core from being attracted by the stationary iron core, wherein the locking plate is released only in the closing process effected by the switching mechanism to permit the movable iron core to be attracted by the stationary iron core, and wherein, upon a flow of high current through the conductor due to the closure of contacts in the closing process effected by the switching mechanism, the movable iron core is operated to actuate the tripping device to open the contacts.

3,940,724

RELAY CONTACT ADJUSTING ARRANGEMENT

Thomas C. Cleary, Northport, and Joseph W. Schleisner, Valley Stream, both of N.Y., assignors to Deutsch Relays, Inc., Long Island, N.Y.

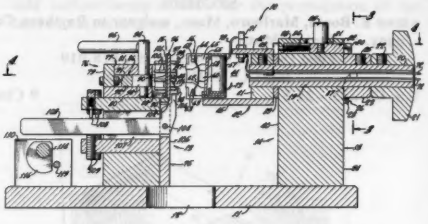
Filed Apr. 4, 1974, Ser. No. 457,919
Int. Cl.² H01H 1/48
U.S. Cl. 335—197 **38 Claims**

1. In combination with a relay having a movable means having movable contact means and fixed means having fixed contact means, a device for adjusting the spacing of the contacts of said relay comprising:

means for positioning said movable means in a first predetermined location,

means for positioning said fixed means in a second predetermined location such that said movable contact means is opposite said fixed contact means and spaced therefrom a distance greater than the spacing thereof in a completed relay,

and means for moving one of said contact means relative to the other of said contact means while said movable means is in said first predetermined location and said fixed means is in said second predetermined location for varying said spacing between said movable and said fixed contact means to a predetermined value.

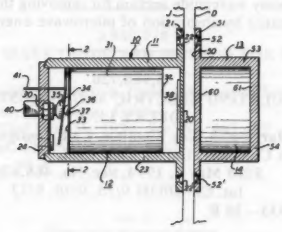


3,940,725

SWITCHING APPARATUS

Nathan Verger, Great Neck, and Gerhard Schmidt, Rego Park, both of N.Y., assignors to Alarm Device Manufacturing Co., Syosset, L.I., N.Y.

Continuation of Ser. No. 440,660, Feb. 8, 1974, which is a continuation of Ser. No. 296,276, Oct. 10, 1972. This application Jan. 24, 1975, Ser. No. 543,672
Int. Cl.² H01H 36/00
U.S. Cl. 335—207 **12 Claims**



1. An apparatus for switching an alarm-signalling device, which is connectable to a protective circuit, which comprises:

a. a housing;

b. a switch which is disposed in the housing, which comprises:

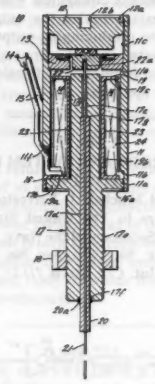
1. a first contact;
2. a metal plate which is mounted in the housing;
3. a resilient support arm which extends into the housing from a location intermediate the first contact and the metal plate;
4. a second contact which is mounted on the resilient support arm so as to be disposed in alignment with and opposite to the first contact;
5. a first magnet which is reciprocally movable in the housing and which is magnetized so that opposite faces thereof define poles of opposite polarity, which is disposed so that one pole faces the resilient support arm and the other pole faces the metal plate; and
6. terminals connected to the first and second contacts, to which the leads from the protective circuit are connectable; and

c. a second magnet which is magnetized so that opposite faces thereof define poles of opposite polarity and which is positionable so that one pole thereof faces the portion of the housing in which the metal plate is mounted, which pole is of the same polarity as the pole of the first magnet which faces the metal plate so that the second magnet repels the first magnet when so positioned.

3,940,726
HIGH SPEED SOLENOID EMPLOYING MULTIPLE SPRINGS

Abraham H. Gershnow, Nashua, N.H., assignor to Centronics Data Computer Corporation, Hudson, N.H.

Filed Aug. 22, 1974, Ser. No. 499,632
Int. Cl.² H01F 7/16
U.S. Cl. 335—274 18 Claims

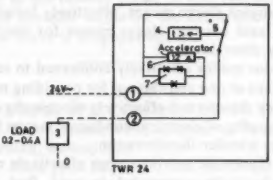


1. A high speed solenoid assembly for driving a print wire comprising:
a housing;
armature means in said housing movable between an impact and a rest position;
first spring means normally stabily biasing said armature only towards the rest position;
solenoid means for urging said armature means towards said impact position;
second spring means for exerting a biasing force directed towards the rest position upon said armature means only after said armature means has moved a predetermined distance towards said impact position;
said first and second spring means cooperatively operating to rapidly return said armature means to said rest position when said coil means is deenergized.

3,940,727
THERMOSTAT WITH AUTOMATIC ACCELERATOR

Flemming Thorsoe, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 449,067, March 7, 1974. This application Mar. 12, 1975, Ser. No. 557,480
Claims priority, application Denmark, Mar. 12, 1973, 1329/73
Int. Cl.² H01H 61/00
U.S. Cl. 337—1 3 Claims

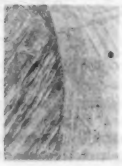


1. A thermostat assembly comprising only two terminals, conductor means forming a series circuit between said terminals, a switch in said circuit, temperature responsive bimetal means for operating said switch, a load in said circuit, an accelerator resistor assembly in said circuit in series with said load, said assembly including an accelerator resistor and diode means in parallel therewith, said diode means being arranged to operate with forward voltage drop thereacross to control the voltage drop across said resistor when current is admitted to said circuit through one of said terminals in the direction of said forward voltage drop.

3,940,728
ALLOY FOR A HIGH TEMPERATURE FUSE

Noboru Komatsu; Mikio Obayashi; Minoru Doi, all of Nagoya; Nobuyoshi Ota, Kariya, and Yoshio Iwai, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho and Nippondenso Co., Ltd., both of, Japan

Filed Aug. 3, 1973, Ser. No. 385,429
Claims priority, application Japan, Aug. 8, 1972, 47-79784
Int. Cl.² H01H 85/04
U.S. Cl. 337—290 4 Claims

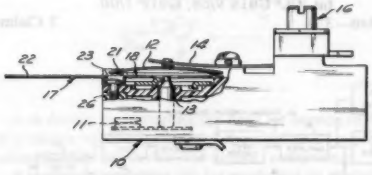


1. In a fuse having a pair of electrical terminals arranged in spaced relationship and insulated from each other, and a metal fuse element disposed adjacent the pair of terminals for forming the electrical connection therebetween, the improvement comprising the metal fuse element being of a metal alloy having a higher resistance to corrosion at elevated temperatures and a melting point at a fixed temperature within a range of 1000° to 1100°C, said alloy consisting of 10–14% aluminum, a second constituent in a range of 0–2.5% and the balance being copper, said second constituent consisting of at least one metal selected from a group consisting of nickel, manganese and iron.

3,940,729
THERMOSTAT WITH HEAT CONDUCTOR

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed Dec. 18, 1974, Ser. No. 534,143
Int. Cl.² H01H 37/32
U.S. Cl. 337—377 14 Claims



1. A thermostat comprising switch means, a bimetal snap disc movable with snap action upon reaching operating temperatures and connected to operate said switch means, and disc seat means formed of a conductor of heat material engaging and locating said disc, said disc seat means being provided with a flexible elongated projection extending from said thermostat permitting said projection to be deformed to extend to a desired location spaced from said body, said disc seat means

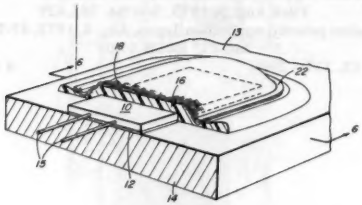
operating to conduct heat along said projection between said disc and said location spaced from said body and disc so that the temperature of said disc is determined at least in part by the temperature at said location and mounting means connecting said conductor to said body preventing movement of said projection from causing any substantial change in the calibration of said disc.

3,940,730

STRAIN GAGE CONSTRUCTION

Given A. Brewer, Marion, Mass., assignor to Brewer Engineering Laboratories, Inc., Marion, Mass.

Filed Feb. 18, 1975, Ser. No. 550,516
Int. Cl.² G01L 1/22
U.S. Cl. 338—2 **3 Claims**



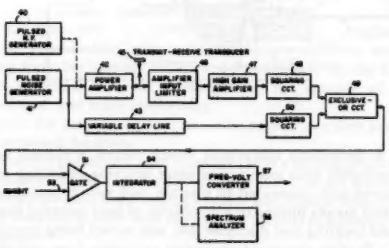
1. In a strain gage assembly for monitoring deformation of a metallic structure, the combination of
   a strain-deformable resistance wire strain gage cemented to a surface of said structure,
   a protective barrier layer of a curable silicone plastic completely covering the exposed surface of said strain gage and extending therebeyond over a portion of said structure surface,
   a metallic apertured overlay member covering that portion of said protective barrier layer that covers said strain gage and providing flange portions adjacent thereto, and
   a sheet metal strip around said protected strain gage over said flange portions of said metal screen, part of said metal strip being welded through said silicone plastic barrier layer to said flange of said overlay member and to said structure surface, said barrier layer thereby providing a void-free seal surrounding said welds and said gage.

3,940,731

ULTRASONIC RANDOM SIGNAL DOPPLER FLOW MEASUREMENT SYSTEM

George R. Cooper, Lafayette, and Vernon L. Newhouse, West Lafayette, both of Ind., assignors to Purdue Research Foundation, Lafayette, Ind.

Filed Aug. 15, 1974, Ser. No. 497,614
Int. Cl.² G01S 9/66; G01P 5/00
U.S. Cl. 340—3 D **7 Claims**



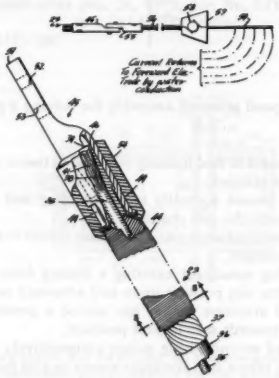
1. A flow measurement device comprising:
   a stationary random noise source having an output signal in the ultrasonic range;
   a transmitter to transmit said output signal toward a target in a flowing medium, said target reflecting signals in said ultrasonic range;
   a delay means connected with said noise source to receive the output signal coupled to said transmitter;
   a receiver to receive said output signal when reflected back from said target; and
   signal processing means connected with said delay means and said receiver to receive the output therefrom and responsive thereto producing an output indicative of the frequency shift between said output signal as transmitted and received, said frequency shift being indicative of the flow rate of said medium.

3,940,732

BUOYANT ELECTRODE AND SYSTEM FOR HIGH SPEED TOWING

John A. Hudson, and Mitchell J. Yelverton, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1970, Ser. No. 24,016
Int. Cl.² H01B 7/12
U.S. Cl. 340—4 E **8 Claims**



1. An improved oceanographic system adapted for being towed at high speed within a body of water for transferring electrical current thereto comprising:
   an electrode;
   central strain means disposed for effectively providing a central foundation for said electrode capable of withstanding high tensional loadings;
   buoyant sleeve means surrounding said central strain means and substantially co-extensive therewith for providing a supporting force therefor;
   a plurality of lightweight metal electrical conductor means placed in a predetermined pattern about the outer surface of said buoyant sleeve means, effectively forming a layer overlying said buoyant sleeve means for conduction of electricity therealong;
   first connector means effectively connected to said central strain means at one end thereof for providing mechanical attachment thereto and effectively electrically connected to said plurality of electrical conductor means for electrical energy transfer therebetween;
   lightweight conductor serving means effectively electrically and mechanically connected to said first connector means and disposed so as to be tightly wound about said predetermined pattern of the aforesaid plurality of lightweight metal electrical conductors and extending a pre-

determined distance therealong for providing retaining engagement thereof and electrical conduction therefrom;

second connector means effectively joined to the other end of said central strain means for attachment of auxiliary devices to be towed thereby;

insulated electrical conductor means effectively attached to said second connector means for current conducting cooperation therewith;

oceanographic instrument means effectively mechanically connected to said insulated electrical conductor means, so as to be towed thereby for performing predetermined oceanographic functions;

electrically operated means effectively attached to, and located within, said oceanographic instrument means and effectively electrically connected to said insulated electrical conductor means for activating said oceanographic means to perform said predetermined oceanographic functions; and

electrical current return electrode means effectively electrically connected to said electrically operated means, and effectively mechanically connected to said oceanographic instrument means, so as to be towed thereby, said electrical current return electrode means extending aft of said oceanographic instrument means and in electrical contact with said body of water for providing a current return path therethrough.

3,940,733

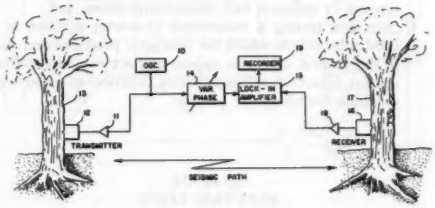
SEISMIC SURVEILLANCE SYSTEM

Ronald F. Johnson, Oakhurst, and Kurt Ikrath, Elberon, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 25, 1974, Ser. No. 482,947

Int. Cl.² H04B *11/00*; G01S *3/80*

U.S. Cl. 340—15 **11 Claims**



1. A method of detecting the presence of an intruder in an area under surveillance, comprising the steps of:

seismically exciting the trunk of an arboreal plant growing in said area, thereby to propagate a seismic wave in the earth via the roots of said plant;

detecting said seismic wave through seismic vibrations coupled from the earth to the trunk of a second arboreal plant growing in said area, via the roots of said plant;

comparing the phase of the detected seismic wave with the phase of the exciting wave; and then

detecting the presence of said intruder by the changes induced in the relative phase of said two compared waves as said intruder walks on the earth through which said seismic wave is propagating.

3,940,734

SEPARATE SURFACE, COMMON DEPTH POINT STACK

Clement J. Blum, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

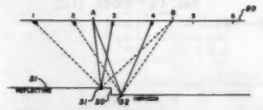
Filed June 22, 1973, Ser. No. 372,711

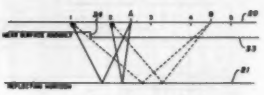
Int. Cl.² G01V *1/36*

U.S. Cl. 340—15.5 CP **24 Claims**

1. The method of delineating near surface anomalies in common depth point seismic surveying where a shot point and detector spread are moved successively along a traverse which comprises:

a. generating a first set of common depth point traces for said traverse with partial fold coverage by combining traces containing energy reflected from common depth points and detected in a first fraction of the surface locations in spreads of full fold detector locations, and





b. generating a second set of common depth point traces for said traverse with partial fold coverage by combining traces containing energy reflected from said common depth points and detected in a second fraction of the surface locations in spreads of full fold detector locations where said first fraction and said second fraction are spaced one from another on the earth's surface,

whereby the presence of near surface anomalies is indicated by differences between time occurrences of the same seismic event in said first and second sets.

3,940,735

DEVICE TO INDICATE NEED TO SERVICE OR INSPECT A MOTOR VEHICLE

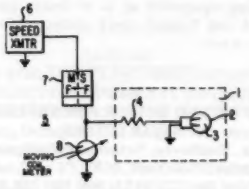
Hartmut Kronenberg, Schwalbach, Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Germany

Filed Oct. 11, 1974, Ser. No. 514,104

Claims priority, application Germany, Oct. 26, 1973, 2353756

Int. Cl.² G01C *22/02*

U.S. Cl. 340—52 D **6 Claims**



1. A device for indicating the need for service or inspection of a motor vehicle because of the passage of a prespecified mileage since the device was zeroed, comprising:

A. a signal transmitter (6) for producing an electrical signal proportional to the actual speed of the motor vehicle,

B. an electrochemical ampere-hour sensor means (2, 9 or 13) connected to receive said signal and to integrate the amplitude of the signal over a time period, whereby the integrated signal provides a measure of the miles travelled by the vehicle, and

C. means connected with the sensor for supplying a signal to an operator of the motor vehicle when the integrated signal reaches a prespecified value.

3,940,736
DIGITAL CODE MONITOR SYSTEM

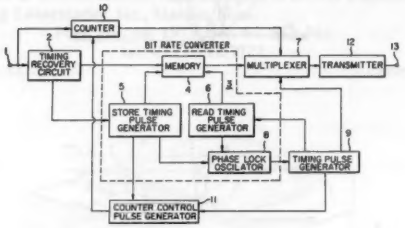
Hiroshi Inaba, and Etsugo Yoneda, both of Yokohama, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed July 24, 1974, Ser. No. 491,306

Claims priority, application Japan, Aug. 2, 1973, 48-87007; Aug. 22, 1973, 48-94742

Int. Cl.² H04L *1/10*

U.S. Cl. 340—146.1 A **5 Claims**



1. A digital code monitor system comprising

A. a transmitting equipment comprising

a. bit-rate converting means for forming time slots by the bit rate conversion of an information pulse train

b. means for forming a check code representing the states of bits in a block consisting of a predetermined number of bits of said information pulse train before bit rate conversion and

c. means for inserting said check code and a frame synchronizing pulse into said time slots and transmitting said bit-rate converted information pulse train with said check code and said frame synchronizing pulse inserted therein to a receiving equipment; and

B. said receiving equipment comprising

a. means for extracting said check code and said frame synchronizing pulse from transmitted pulse train,

b. means for bit-rate converting said transmitted pulse train,

c. means for forming, in a manner exactly similar to that of forming said check code in said transmitting equipment, a check code from a bit-rate converted information pulse train, and

d. means for comparing said extracted check code with said second mentioned check code formed in said receiving equipment so as to detect whether said extracted and formed check codes coincide with each other or not.

3,940,737
METHOD OF AND DEVICE FOR SKELETONIZING CHARACTERS

Matthijs Beun, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,880

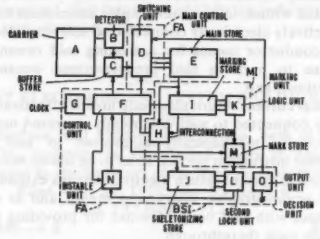
Claims priority, application Netherlands, Jan. 28, 1972, 7201225

Int. Cl.² G06K *9/12*

U.S. Cl. 340—146.3 H **5 Claims**

1. A machine method of skeletonizing characters which are imaged on a two dimensional regular pattern of positions, a character position being distinguished from a background position by digital information being present, the characters being skeletonized for removal of redundant information in that the information of a character position is changed into that of a background position until a skeleton character is obtained whose stroke elements consist of a single series of character positions which succeed each other in accordance with an adjacency criterion, said skeletonizing being performed in cycles, the position of the character during skeletonizing being treated during a cycle in a regular and fixed sequence, said method comprising the steps of:

A. machine marking character positions which are situated at an edge of the character in accordance with an edge criterion in a first sub-cycle of a cycle by associating additional information with information of those character positions;



B. first testing by the use of a machine, each of the so-marked character positions in a second sub-cycle against a first indispensability criterion to determine whether to remove or maintain said character position; and

C. machine testing a maintained character position in a third sub-cycle in which the character positions removed in the second sub-cycle appear as background positions against a second indispensability criterion to remove or maintain the character position.

3,940,738
ELECTRIC LOCK

Lloyd L. Teeters, 17834 N. 18th Drive, Phoenix, Ariz. 85023

Filed July 10, 1974, Ser. No. 487,382

Int. Cl.² G08B *21/00*; H04Q *9/00*; E05B *49/00*

U.S. Cl. 340—147 MD **5 Claims**

1. An electronic lock mechanism having a keyway slot for a key comprising in combination:

a control circuit comprising an optical sensing matrix having a plurality of optical sensors, each sensor being normally energized unless unterrupted by an object inserted in the keyway slot,

a logic decoder connected to said sensing matrix for receiving signals therefrom, said decoder responding to each of said signals received from said optical sensors and providing an alarm signal for all combinations of signals excepting a first predetermined combination of signals which generates a lock actuating signal and a second predetermined combination of signals which generates an unlock signal, and

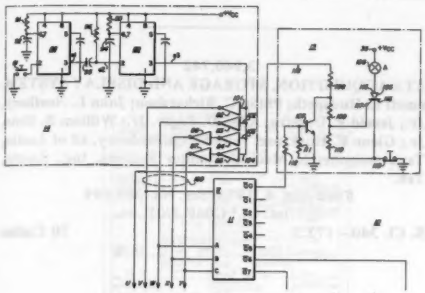
solenoid means for moving a door latching means,

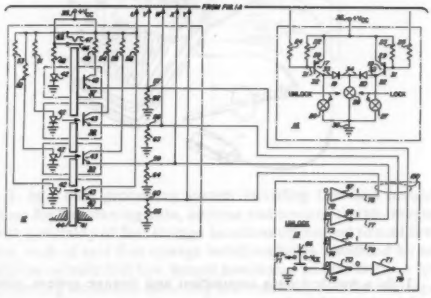
said solenoid means being connected to said logic decoder and energized by said lock actuating signal and said unlock signal,

whereby the output of said decode logic controls the position of said latching means,

said control circuit further comprising a time delay circuit connected between said logic decoder and said solenoid

means for providing time delay before the lock actuating signal is effective, and





an alarm latch connected to an alarm for receiving said alarm signal for actuating the alarm.

3,940,739

ALARM REPORTING SYSTEM

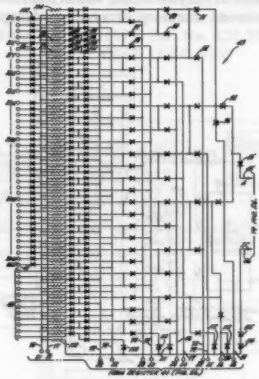
Donald J. Quimet, Mundelein, Ill., assignor to Telephone & Data Products, Inc., Mundelein, Ill.

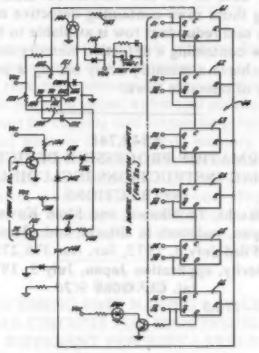
Filed July 5, 1974, Ser. No. 485,840

Int. Cl.[2] G08B *13/08*; H04Q *1/32*

U.S. Cl. 340—164 R **19 Claims**

1. An alarm reporting system comprising in combination, a selection matrix having a plurality of alarm inputs, selector means coupled to the matrix for sequentially selecting each of the alarm inputs, clock means for producing a clock signal for sequencing the selector means, means coupling the matrix to the clock means and responsive to the status of the selected alarm input for controlling the period of said clock signal, interfacing means for producing a two level output signal including the clock period, means for coupling the output signal to a transmission means for transmission to a second station, and monitoring means at the second station, including means for receiving the transmitted signal and recovering the clock period therefrom, and means responsive to the period of





the recovered clock signal for indicating the status of each of the alarm inputs.

3,940,740

METHOD FOR PROVIDING RECONFIGURABLE MICROELECTRONIC CIRCUIT DEVICES AND PRODUCTS PRODUCED THEREBY

Leland I. Coontz, Orange, Calif., assignor to Actron Industries, Inc., Monrovia, Calif.

Filed June 27, 1973, Ser. No. 374,242

Int. Cl.[2] H01L *21/70, 27/00*

U.S. Cl. 340—166 R **11 Claims**

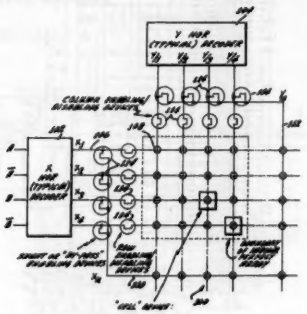
5. The combination with an integrated microelectronic memory array including a predetermined plurality of row and column selection conductors having memory cells at each intersection, for improving the production yield thereof comprising:

a. a redundant, duplicate row conductor having memory cells located at the intersections with the plurality of column conductors, said redundant row formed on the same unitary substrate and at the same time as the microelectronic memory array;

b. an electrically alterable switching circuit fabricated in each of the plurality of row conductors and in said duplicate row conductor, for selectively enabling and disabling individual row conductors, said electrically alterable

switching circuits formed on the same unitary substrate and at the same time as the microelectronic memory array; and

c. altering means, integral with the memory array, formed on the same unitary substrate and at the same time as the microelectronic memory array, for selectively enabling



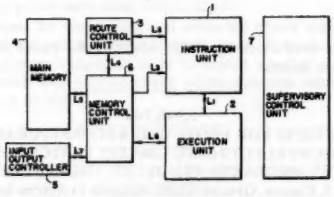
individual ones of said switching circuits for testing the memory cells in the row associated therewith and for disabling those rows containing defective memory cells, whereby said redundant row is available to be substituted for a row containing a defective memory cell in attempting to achieve a memory array having a predetermined plurality of operable rows.

3,940,741

INFORMATION PROCESSING DEVICE FOR PROCESSING INSTRUCTIONS INCLUDING BRANCH INSTRUCTIONS

Hisashi Horikoshi, Tachikawa, and Shun Kawabe, Hachioji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed July 5, 1973, Ser. No. 376,275
Claims priority, application Japan, July 5, 1972, 47-66680
Int. Cl.[2] G06F 9/20
U.S. Cl. 340—172.5 **10 Claims**



1. An information processing device comprising, in combination:

a route memory which includes

route index memory means for storing branch target addresses of a plurality of branch target instructions, and

route buffer memory means for storing branch target instructions at the corresponding branch target addresses stored in said route index memory;

instruction unit means for picking up and decoding an instruction to be processed;

referencing means, connected to said instruction unit and said route memory, for referencing the route index memory means by the address of the instruction to be processed from said instruction unit means when the decoding of the instruction is started by said instruction unit means, to detect the branch target address in said route index memory means coincident with the address of the instruction to be processed; and

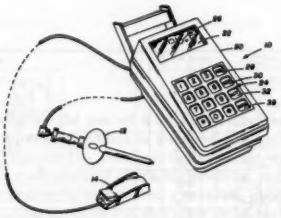
read-out means, connected to said route memory and said instruction unit means, for reading out the branch target instruction corresponding to the branch target address detected by said referencing means and for transferring the branch target instruction read-out from said route buffer memory means to said instruction unit means.

3,940,742

DATA ACQUISITION, STORAGE AND DISPLAY SYSTEM

Emmett L. Hudspeth; Philip C. Richardson; John L. Neathery, Jr.; Jerald P. Dykstra; Allen D. Boger, Jr.; William B. Sims, Jr.; Glenn E. Hunt, and Tony M. Quisenberry, all of Austin, Tex., assignors to Medical Monitor Systems, Inc., Austin, Tex.

Filed Aug. 6, 1973, Ser. No. 385,699
Int. Cl.[2] G06F 3/05
U.S. Cl. 340—172.5 **50 Claims**



1. In a medical data acquisition and storage system, comprising in combination:

display means for providing a visual presentation of input medical data,

at least one data input means for accepting externally generated data,

a display register for receiving and holding externally generated data to be presented at said display means,

first means for gating data from each of said input means to said display register,

manual input means for generating input data to be gated to said display register,

memory means having multiple address locations for storing data holding in said display register,

second means for gating the data holding in said display register into said memory means for retention therein,

a state controller connected to said means for gating for establishing the order of data gated to said display register from all of said input means,

record means for actuating said second means for gating to transfer data from said display register to said memory means,

memory control means responsive to the transfer of data from said display register to said memory means to actuate said state controller to advance the sequence of ordered data gated to the display register, and

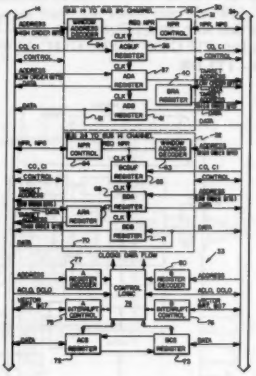
repeat means for actuating said state controller to repeat the gating of input data into said display register from the input means previously gated thereto.

3,940,743

INTERCONNECTING UNIT FOR INDEPENDENTLY OPERABLE DATA PROCESSING SYSTEMS

Brian P. Fitzgerald, Framingham, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 5, 1973, Ser. No. 412,572
Int. Cl.² G06F 15/16
U.S. Cl. 340—172.5 19 Claims



1. In a data processing system including first and second buses for transferring data, address and control signals, means with a plurality of first storage locations connected to said first bus, each of said first storage locations being identified by an address on said first bus, means connected to said first bus for generating addresses including addresses for said first storage locations and other addresses, means for transmitting onto said first bus first transfer control signals for effecting a data transfer over said first bus, and means with a plurality of second storage locations connected to said second bus, each of said second storage locations being identified by an address on said second bus, the improvement of interconnecting means connected to said first and second buses comprising:

A. a bidirectional data path for coupling data signals between the first and second buses,

B. decoding means responsive to preselected ones of the other addresses on said first bus for enabling said interconnecting means,

C. means responsive to the receipt of one of the preselected addresses in said decoding means for converting an address on the first bus to an address on said second bus corresponding to one of said second storage locations,

D. means responsive to the first transfer control signals on the first bus for transferring data between said first bus and said bidirectional data path, and

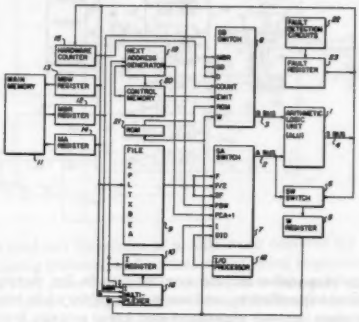
E. means for generating second transfer control signals in response to the address and first transfer control signals, said data processing system additionally including means responsive to second transfer control signals on said second bus for transferring signals between said second bus and the second addressed location identified by the address from said address conversion means to thereby transfer the data between said bidirectional data path and said one of said second storage locations.

3,940,744

SELF CONTAINED PROGRAM LOADING APPARATUS

Howard C. Mock, Rancho Palos Verdes; Kenneth N. Isaac, Tustin; Charles P. Disparte; Warren L. Hall, both of Palos Verdes Peninsula, and James Beasely, Sepulveda, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1973, Ser. No. 425,353
Int. Cl.² G06F 11/04, 9/00
U.S. Cl. 340—172.5 10 Claims



9. In a computer having a main memory for storing programs, diagnostic apparatus comprising:

additional read-only memory for storing a program,

a diagnostic program stored within said additional memory,

circuit means for copying said diagnostic program from said additional memory into said main memory, and,

a microprogrammable control memory means responsive to the execution of a micro-coded program contained within said control memory means for controlling said circuit means in the copying of said diagnostic program from said additional memory to said main memory.

3,940,745

DATA PROCESSING UNIT HAVING A PLURALITY OF HARDWARE CIRCUITS FOR PROCESSING DATA AT DIFFERENT PRIORITY LEVELS

Raoul Sajeva, Ivrea, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy

Filed Apr. 26, 1974, Ser. No. 464,726
Claims priority, application Italy, June 5, 1973, 68650/73
Int. Cl.² G06F 9/18, 9/16, 9/10
U.S. Cl. 340—172.5 5 Claims

1. In a data processing unit of the type having a plurality of hardware data processing circuits for processing data at corresponding priority levels, a memory for storing microinstructions and, for each of said priority levels a program counter register for addressing in succession said microinstructions, wherein the improvement comprises:

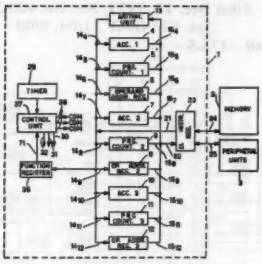
means controlled by a level change signal defined by a predeterined microinstruction executed by the circuits of a predetermined priority level for switching said unit from said predetermined level to a lower priority level, said predetermined microinstruction comprising a first character code for defining the priority level change microinstruction and a second character code for specifying an address;

a first register included in said data processing unit for storing said first character code;

a control unit connected to said first register for decoding said first character code and for generating a plurality of control signals in accordance with said predetermined microinstruction defined by said first character code;

means responsive to said control signals for transferring the content of the program counter register of said lower

priority level into a predetermined location of said memory; and



means responsive to said control signals for storing the address specified by said second character code into said program counter register of said lower priority level.

3,940,746

SYSTEM FOR AUTOMATICALLY PROCESSING AND PRINTING THE CONTENTS AND THE FORMAT OF A TEXT

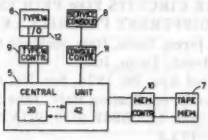
Vittore Vittorelli, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Continuation of Ser. No. 291,145, Sept. 15, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 494,641

Claims priority, application Italy, Sept. 29, 1971, 70186; Apr. 19, 1972, 68214/72; July 14, 1972, 69276/72

Int. Cl.[2] G06K *7/00;* **B41J** *5/44*

U.S. Cl. 340—172.5 **27 Claims**



1. A system for automatically processing and printing the contents and the format of a text of lines of characters, the system comprising:

input means for developing character codes corresponding to desired characters to be entered into the system;

printing means receptive of character codes for printing characters in character lines each line having a maximum predetermined length;

storage means receptive of character codes for storing each of the codes associated with entered character lines into one of a plurality of storage blocks and for reading same, each block having a capacity for storing the code of one character line of said maximum predetermined length and comprising means defining an address for each block and means for indicating whether a block is free for storing code data therein; and

control means associated with said input means for controlling the operation of said storage means and said printing means, said control means comprising selecting means associated with the indicating means and the address defining means for automatically selecting a block free for storing code data therein and means associated with said selecting means for enabling said printing means to print the address of the free block and for enabling said storage means to record in the free block the character codes of the next character line subsequently entered by said input means.

3,940,747

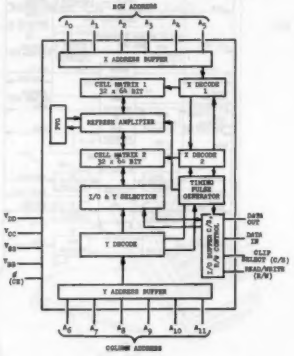
HIGH DENSITY, HIGH SPEED RANDOM ACCESS READ-WRITE MEMORY

Chang-Kiang Kuo, and Norishisa Kitagawa, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1973, Ser. No. 385,122

Int. Cl.[2] G06F *13/00;* **G11C** *13/00*

U.S. Cl. 340—173 DR **3 Claims**



1. A random access memory device which comprises, in combination:

a. a data input terminal,

b. a data output terminal,

c. a matrix of memory storage cells arranged in rows and columns,

d. a plurality of sense and refresh amplifier means, one located in the center of each of said columns of storage cells, each amplifier means having a data line associated therewith and connected to each storage cell in the associated column, a portion of each data line being positioned on each side of the amplifier means, each amplifier means including two dummy storage cells, each dummy storage cell being directly coupled to a different one of the said portions of each data line,

e. address input means for providing a row select signal and a column select signal,

f. read/write means for determining whether a read or a write function is to be performed,

g. said cells being responsive to a selected row address signal and a read signal on said read means to place an indication of the data stored in each storage cell of said on the associated data line for all of the amplifier means,

h. means responsive to a selected column address signal to read out from the amplifier means associated with said selected column onto said row output terminal, to provide a read-out operation,

i. means responsive to a write signal to couple data from said data input terminal to said data line of the amplifier means associated with said column address signal, means responsive to said row address signal to cause said data at said line associated with said amplifier means to be stored in the storage cell in the selected column corresponding to said column address, and means responsive to said

write signal to inhibit read-out to said data output terminal, and

j. the sense and refresh amplifier means functioning to restore data read-out from the storage cells to the data lines at full logic levels when read back into the respective cells.

3,940,748

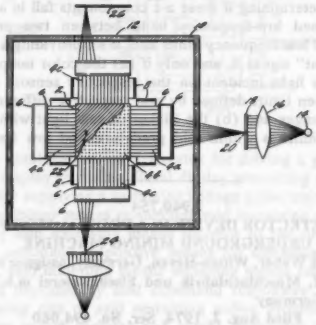
OPTICAL INFORMATION PROCESSING SYSTEM WITH COLOR CENTER CRYSTAL

Arthur N. Carson, 14 Daniel Road, Bristol, Conn. 06010

Continuation of Ser. No. 525,484, Feb. 7, 1066, abandoned, which is a continuation of Ser. No. 217,858, Aug. 20, 1962. This application Nov. 14, 1969, Ser. No. 871,392

Int. Cl.[2] G11C *13/04*

U.S. Cl. 340—173 CC 20 Claims



1. Apparatus comprising a body having color centers therein normally in a first stable state, means to generate first and second coherent light beams of predetermined wave lengths, at least one of said beams containing information, means for directing said first and second beams to intersect at a selected part of said body to illuminate color centers in said selected part with both of said coherent light beams, said illuminated color centers being changed to a second stable state whereby information is stored in said body where said beams intersect, and means for irradiating said body with at least one coherent light beam to retrieve said information.

3,940,749

CIRCULATORY STORAGE NETWORK FOR CODED DATA

Enrico Cicognani; Alfonso Lamartina, and Riccardo Caldarella, all of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 332,696, Feb. 15, 1973, abandoned. This application Feb. 20, 1975, Ser. No. 551,403

Claims priority, application Italy, Feb. 16, 1972, 20619/72

Int. Cl.[2] G11C *19/00, 21/00*

U.S. Cl. 340—173 RC 10 Claims

1. A network for the temporary storage of binary code words assigned to at least one outgoing channel, comprising:

input means for storing incoming code words;

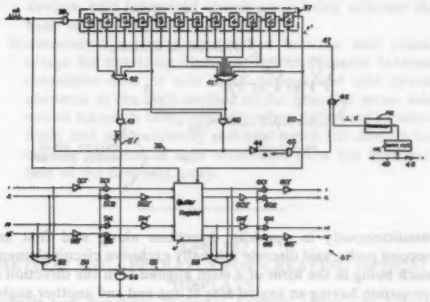
closed-loop memory means for continuously recirculating several code words in a recurrent cycle composed of a multiplicity of time slots;

insertion means for introducing an invariable binary heading into at least one of said time slots to mark the beginning of a cycle;

detector means coupled to said memory means for generating a periodic start pulse in response to circulation of said heading past a predetermined point of the closed loop preceding a one-word storage section thereof;

transfer means responsive to said start pulse and coupled to said memory means for entering a code word from said input means in a vacant time slot; and

control means responsive to the availability of said outgoing channel for establishing a short circuit for the circulating code words around said storage section while initiating



the read-out therefrom of a code word destined for said outgoing channel, said control means being responsive to said start pulse from said detector means for opening said short circuit with generation of a vacant time slot immediately preceding said heading whereby the next code word entered from said input means by said transfer means occupies the last time slot of a cycle.

3,940,750

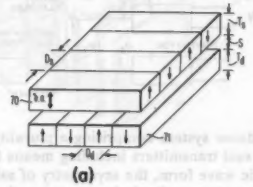
WALL TOPOLOGY STORAGE SYSTEM

Otto Voegeli, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,659

Int. Cl.[2] G11C *11/15*

U.S. Cl. 340—174 TF 13 Claims



(a)

1. A data storage apparatus comprising a magnetic storage medium having a series of stripe domains separated by domain walls having at least one polarity reversal in the wall, the sign of said polarity reversal representing data stored in the wall, and

a drive film comprising a series of stripe domains separated by domain walls and located adjacent to and orthogonal to the stripe domains in said storage medium, wherein the intersections of the domain walls of said storage medium and of said drive film define bit locations.

3,940,751

MUTUALLY EXCLUSIVE PARALLEL-SIDED LOOPS

Robert M. Sandfort, St. Charles, Mo., assignor to Monsanto Company, St. Louis, Mo.

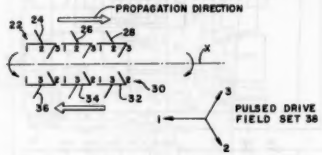
Filed Mar. 27, 1974, Ser. No. 455,275

Int. Cl.[2] G11C *11/14, 19/08*

U.S. Cl. 340—174 TF 18 Claims

1. A field-accessed bubble propagation system, comprising a sheet of magnetic bubble material, means for producing and maintaining bubbles therein, a ferromagnetic overlay pattern operatively disposed on said sheet including a first bubble path

composed of discrete mutually exclusive circuit elements and a second bubble path parallel to said first path composed of discrete mutually exclusive circuit elements whose shape and orientation are symmetrical to the elements in said first path with respect to a symmetry line between and parallel to said first and second paths, and means for applying a magnetic drive field in the plane of said sheet to propagate bubbles



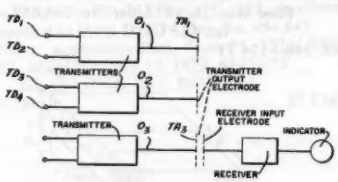
simultaneously in opposite directions along said first and second paths, said discrete mutually exclusive circuit elements each being in the form of a stem aligned with the direction of propation having an angled arm at one end and another angled arm on the other side of said stem intermediate of the ends of said stem, said angled arms being like staggered branches projecting from said stem.

3,940,752

TRANSDUCING SYSTEM

Willard E. Bair, 405 Sunnycrest Court West, Urbana, Ill. 61801

Filed Feb. 26, 1974, Ser. No. 446,052
Int. Cl.² G08C 19/16
U.S. Cl. 340—189 M 22 Claims



1. A transducer system comprising a plurality of transmitters, each of said transmitters including means for generating an asymmetric wave form, the asymmetry of said wave being proportional to a quantity being transduced, each of said transmitters including a capacitive coupling output electrode, a receiver, said receiver including a capacitive coupling input electrode adapted to be selectively positioned closely adjacent and electrostatically coupled to any one of said transmitter electrodes to receive signals therefrom, said electrostatic coupling comprising the principal signal coupling between said transmitters and receiver, said receiver including means for converting said asymmetric wave to a representation of said transduced quantity in proportion to said asymmetry.

3,940,753

DETECTION OF PRESENCE OR ABSENCE OF FLAMES

Peter Müller, Oetwil a. See, Switzerland, assignor to Cerberus AG, Mannedorf, Switzerland

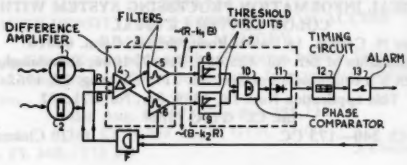
Filed Sept. 13, 1974, Ser. No. 505,627
Claims priority, application Switzerland, Sept. 25, 1973, 13722/73
Int. Cl.² G08B 21/00
U.S. Cl. 340—227 R 20 Claims

1. Method to detect presence or absence of a flame in which at least two photo-electric sensors (1, 2) are provided, wherein

each one of the sensors is sensitive to a predetermined spectral range of incident light and wherein the respective spectral ranges to which said sensors are sensitive are different;

the sensors providing at least two respective sensed signals, said method comprising

evaluating the relative relationship of the a-c components of the respective sensed signals from the sensors (1, 2) representative of presence of light in said spectral ranges



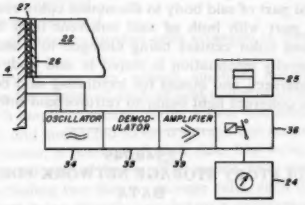
and determining if these a-c components fall in a predetermined low-frequency band between two predetermined low frequency limits and, if so, providing a "flame present" signal if, and only if (a) the color temperature of the light incident on the respective sensors is lying between limits defined by said respective different spectral ranges and (b) the flicker of said light within both said limits is within said predetermined low frequency limits.

3,940,754

FLUID DETECTOR DEVICE IN A DRIVE MOTOR FOR AN UNDERGROUND MINING MACHINE

Karl-Heinz Weber, Witten-Heven, Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed Aug. 2, 1974, Ser. No. 494,060
Claims priority, application Germany, Aug. 30, 1973, 2343752
Int. Cl.² G08B 21/00
U.S. Cl. 340—242 10 Claims



1. Apparatus for detecting penetration of fluid in combination with a drive motor for an extracting machine such as a drum-type coal cutting machine employed for underground mining operations, said drive motor including windings within a motor housing, a motor shaft extending through end plates at the ends of the motor housing, bearing means supporting the motor shaft for rotation within the housing, and annular seal means between the motor shaft and the housing to normally prevent the passage of fluid into the housing from at least one end thereof, the improvement comprising:

capacitive means including at least one charged carrier probe spaced from said seal means along said motor shaft for ultimate support by the motor housing between the end plates in a manner such that fluid penetrating into the motor housing beyond said seal means contacts and reduces the capacitive charge of said capacitive means,

detecting means coupled in an electric circuit which includes said capacitive means for producing an electrical signal corresponding to a decrease capacitance of said

capacitive means to thereby indicate penetration of fluid into the motor housing, and

means energized in response to said electrical signal.

3,940,755

PLASMA DISPLAY DRIVING APPARATUS

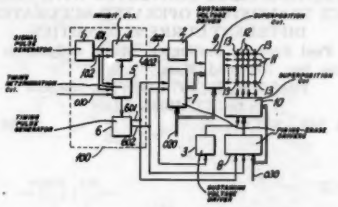
Masamichi Shutoh, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1974, Ser. No. 498,134

Claims priority, application Japan, Aug. 22, 1973, 48-94171

Int. Cl.² G08B 5/36

U.S. Cl. 340—324 M 1 Claim



1. In combination, an apparatus for driving a plasma discharge display including plural display generating electrodes, means for supplying a sustaining voltage pulse train, selective pulse inhibiting means connecting said sustaining pulses supplied by said supplying means therefor to the display electrodes, command responsive means for signalling a display change, said inhibiting means including means responsive to a signal provided by said command responsive means for suppressing one of said sustaining pulses provided by said supplying means therefor and means responsive to a signal provided by said command responsive means for supplying a display modifying signal to a display electrode during the time interval when said sustaining signal is suppressed by said inhibiting means, wherein said inhibiting means comprises gate means, and monostable multivibrator means for disabling said gate means for a timed interval.

3,940,756

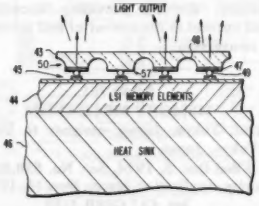
INTEGRATED COMPOSITE SEMICONDUCTOR LIGHT-MITTING DISPLAY ARRAY HAVING LED'S AND SELECTIVELY ADDRESSABLE MEMORY ELEMENTS

Alexander G. Findlay, Cupertino, Calif., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1974, Ser. No. 497,991

Int. Cl.² G06F 3/14

U.S. Cl. 340—324 M 6 Claims



1. A composite integrated circuit light-emitting display array comprising:

a monolithic array of LED devices, each of said devices being adapted when energized to emit light observable from the front surface of said array, said monolithic array being constituted by a monolithic transparent GaP crystal, each of said LED devices constituting at least one diode having a separate p-n junction at which light is radiated, said junction being at the back surface of said crystal, said light being transmitted through said crystal for being observed at the front surface of said crystal;

a monolithic integrated circuit array of selectively addressable independent memory circuit elements corresponding to and adapted for energizing respective ones of said LED devices, said integrated circuit array being adjacent the back surface of said crystal; and

interconnection means sandwiched between said planar arrays for providing electrical interconnection between respective ones of said LED devices and said circuit elements at the back surface of the first-said array, said circuit elements being operable when addressed to selectively and independently energize said LED devices for causing emission of light observable from the front surface of the first-said array.

3,940,757

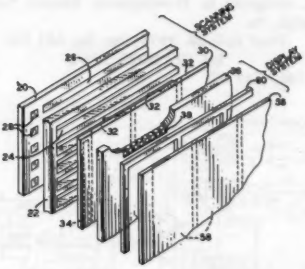
METHOD AND APPARATUS FOR CREATING OPTICAL DISPLAYS

Francis Jack Purchase, Waterloo, Canada, assignor to Autotelic Industries, Ltd., Ft. Erie, Canada

Filed Feb. 5, 1975, Ser. No. 547,126

Int. Cl.² G08B 5/36

U.S. Cl. 340—324 M 30 Claims



1. In an optical display device; at least one conductive member having at least one end exposed, light emitting means at said one end of said member responsive to a voltage applied to said member for developing light, a source of chronologically spaced voltage pulses, an impedance element serially connected between said source and said member, the impedance of said element being high when the element is dark and going low after a predetermined time delay when the element is illuminated, and illuminating means for illuminating said element for a period of time prior to the supply of a pulse thereto from said source, said period of time being at least as long as said time delay whereby the supply of a voltage pulse to said element results in substantially instantaneous actuation of said light emitting means.

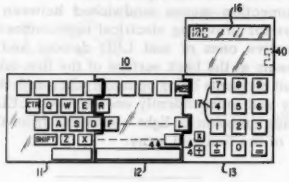
26. The method of transmitting electric signals under the control of a radiation sensitive impedance element in which the time period of a said signal is substantially less than the time period required for the element to go to low impedance in the presence of radiation, said method comprising effecting the intermittent and repetitive supply of radiation to said element and the intermittent and repetitive supply of electric signals to said element in such timed relation that the element has low impedance when a said signal is supplied thereto.

3,940,758

EXPANDABLE KEYBOARD FOR ELECTRONIC POCKET CALCULATORS AND THE LIKE

George D. Margolin, 174 W. 76 St., New York, N.Y. 10023

Filed Sept. 20, 1974, Ser. No. 507,756
Int. Cl.² G06F 3/02
U.S. Cl. 340—337 9 Claims



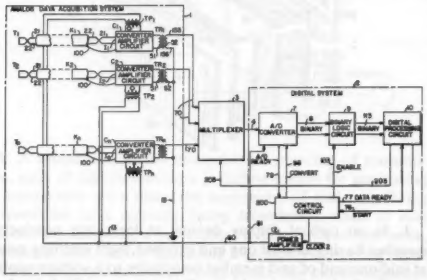
1. A keyboard arrangement including a first array of keys operative selectively on a first electronic circuit, said keyboard arrangement being physically detachable into a plurality of portions each bearing a section of said array of keys, each of said portions being adapted to electrically interconnect with adjacent keyboard portions for selective operation on said first electronic circuit.

3,940,759

ANALOG SIGNAL PROCESSING SYSTEM WITH CORRECTION FOR AMPLIFIER OFFSET

William E. Zitelli, Media, and Andras I. Szabo, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1974, Ser. No. 482,194
Int. Cl.² H03K 13/02
U.S. Cl. 340—347 AD 15 Claims



1. An analog signal processing system including an analog data acquisition subsystem for transmitting from remote locations at least one low-level analog signal;

analog to digital (A/D) converter means responsive to said analog input signal for converting the said signal into a digital input signal, and

a digital system for processing said digital input signal with said analog signal processing system comprising:

means within said data acquisition subsystem for converting one low-level analog signal into a pair of time-displaced analog input signals having opposite polarities, with each input signal of said pair carrying information relative to the magnitude of said low-level analog signal;

amplifier means successively responsive to each input signal of said pair of input signals for generating a corresponding pair of time-displaced amplified signals each having an offset error due to drift in said amplifier means;

analog to digital converter means successively responsive to each amplified signal of said pair of amplified signals for generating a corresponding pair of successive digital output signals;

a digital subsystem including means for algebraically combining said of a pair digital output signals to derive one digital measurement signal characteristic of said magnitude of said one low level analog signal; and

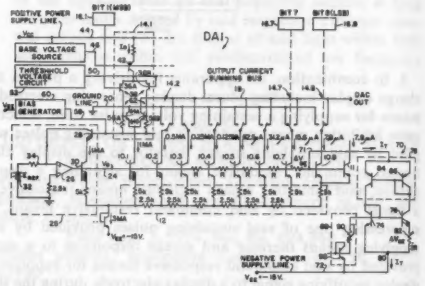
means for digitally processing said digital measurement signal in relation to said data acquisition subsystem, in relation to said means for algebraically combining and in relation to said analog to digital converter means, whereby said offset error is substantially eliminated from said digital measurement signal.

3,940,760

DIGITAL-TO-ANALOG CONVERTER WITH CURRENT SOURCE TRANSISTORS OPERATED ACCURATELY AT DIFFERENT CURRENT DENSITIES

Adrian Paul Brokaw, Burlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Mar. 21, 1975, Ser. No. 560,954
Int. Cl.² H03K 13/04
U.S. Cl. 340—347 DA 20 Claims



1. In a digital-to-analog converter of the type formed with a plurality of current source transistors arranged to carry different levels of current according to a predetermined weighting pattern, the improvement which comprises:

a plurality of current source transistors arranged to operate at different current densities and therefore different base-to-emitter voltages when carrying said different levels of current;

resistance means connected between the bases of successive current source transistors; and

means for developing across the resistance means a voltage, varying with absolute temperature, corresponding to the difference between base to emitter voltages of the successive current source transistors;

whereby the emitter voltages of the successive current source transistors are equal and stable with respect to temperature, thereby providing accurate levels of weighted current in the converter and accurate digital-to-analog conversion.

3,940,761

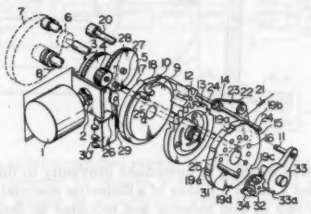
MEMORY MECHANISM

Kiyoyuki Arai, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Dec. 5, 1974, Ser. No. 530,008
Claims priority, application Japan, Dec. 15, 1973, 48-139320
Int. Cl.² G08B 5/30
U.S. Cl. 340—373 5 Claims

1. In a memory mechanism for controlling change of informations in a plurality of information systems each including information to be incrementally changed and indicated in succession, the improvement which comprises actuation means adapted to be actuated in response to a predetermined input signal whenever said actuation means receives such a

signal, a first memory wheel operated by said actuation means to incrementally change the informations in the first system of said information systems until a cycle of incremental information change is completed and having an intermittent transmission means, a first transmission wheel for engaging said intermittent transmission means to be operated thereby, a second memory wheel including a second transmission wheel engaging said first transmission wheel to be operated thereby and adapted to incrementally change the informations in the second system of said plurality of information systems each time said first memory wheel has made one complete rotation so as to complete a cycle of incremental information change each time said second memory wheel makes one complete rotation,



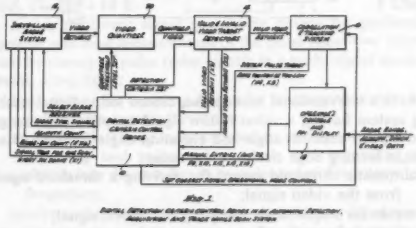
a first camming portion formed in at least one selected position of said first memory wheel, a second camming portion formed in at least one position of said second memory wheel, lever means urged to act on said first and second memory wheels and adapted to be operated during the lever is in engagement with both said first and second camming portions and operation means operatively connected to said lever means to operate said first memory wheel to allow the first memory wheel to effect incremental information change in said first information system during said lever means is operating independent of said input signal whereby incremental change of the informations in the first information system is controlled.

3,940,762

DIGITAL DETECTION CRITERIA CONTROL DEVICE FOR VIDEO MAPPING, DETECTION PARAMETER CONTROL, OPTIMUM RADAR RECEIVER SELECTION AND REJECTION OF NON-MOVING TARGETS

David A. Ethington, La Mirada; Richard D. Wilmot, Fullerton, and Herbert Y. Yamashiro, La Mirada, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 9, 1965, Ser. No. 486,047
Int. Cl.[2] G01S 9/02
U.S. Cl. 343—5 DP 6 Claims



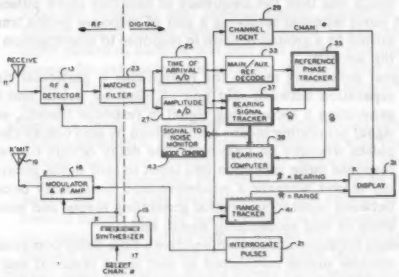
1. A digital detection criteria control device for operation in conjunction with a radar transmitter-receiver apparatus having range count and azimuth position signals and capable of generating a quantized video signal, said digital detection criteria control device comprising a memory having a predetermined number of words, each of said words having a plurality of sets of first, second and third bits, corresponding sets of said first, second and third bits within each word corresponding to quantum areas within one of a plurality of sectors constituting the surveillance area of said radar transmitter-receiver; means responsive to said range count and azimuth position signals for sensing successive bits of said memory at the same rate as and in synchronism with the bits of said quantized video signal; target detection apparatus responsive to said quantized video signal for determining whether target indications from said quantized video signal are valid or invalid; means for periodically generating code bits and writing said code bits in said memory in response to said target indications for each quantum area of said surveillance area; means for reading said code bits out from said memory in synchronism with coverage of said surveillance area by said radar transmitter-receiver; and means responsive to said code bits read out from said memory for providing control indications for successive corresponding quantum areas of said surveillance area and to switch to preselected types of receivers of said radar transmitter-receiver apparatus for said successive corresponding quantum areas.

3,940,763

DIGITAL TACAN SYSTEM

Ronald Y. Paradise, Hillsdale, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Apr. 5, 1974, Ser. No. 458,202
Int. Cl.[2] G01S 9/02
U.S. Cl. 343—6 DF 11 Claims



9. In a Tacan receiver, means to decode the Tacan bearing comprising:

a. means to detect the time of arrival of each signal pulse and to provide an output indicative thereof;

b. means to detect the amplitude of each signal pulse and to provide an output indicative thereof;

c. means to detect the time of arrival of a reference pulse;

d. digital computing apparatus having as inputs the output of said means to detect the time of arrival of each signal pulse, means to detect the amplitude of each signal pulse and means to detect the time of arrival of a reference pulse, said digital computing means programmed to:

1. compute from the time of arrival of said reference pulses using a first Kalman Filter, the estimated frequency and phase of the transmitted signal;

2. compute from the frequency, the amplitude and the estimated frequency, using a second Kalman Filter, an estimate of the state variables of the bearing signal; and

3. compute from said state variables and the estimated phase, the bearing of the receiver with respect to the transmitting station.

3,940,764
PULSE PAIR RECOGNITION AND RELATIVE TIME OF ARRIVAL CIRCUIT

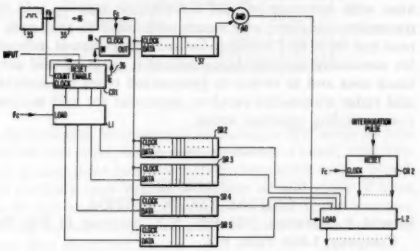
Dennis Edwin Beeswing, Romford, England, assignor to Elliott Brothers (London) Limited, London, England

Continuation-in-part of Ser. No. 543,153, Jan. 22, 1975, abandoned, which is a continuation of Ser. No. 403,762, Oct. 5, 1973, abandoned. This application Mar. 5, 1975, Ser. No. 555,639

Claims priority, application United Kingdom, Oct. 5, 1972, 45920/72

Int. Cl.² G01S 9/56; H03K 5/20

U.S. Cl. 343—6.5 LC **19 Claims**



18. In a transponder system aboard an aircraft, in combination:

clock means for generating fine clock pulses and coarse clock pulses, the coarse clock pulses being synchronized with the fine clock pulses and occurring at a frequency much less than the frequency of said fine clock pulses;

an input terminal receiving a pair of response pulses transmitted by a ground beacon in response to interrogation by the aircraft;

signal generating means for recognizing a particular time separation between said pair of response pulses and for generating a recognizing signal in response thereto, said signal generating means being driven by said coarse clock pulses whereby an unknown time delay occurs between response pulse reception and input to said signal generating means whereas a predetermined time delay occurs between input to said signal generating means and generation of said recognizing signal; and

means for determining said unknown time delay comprising counter means connected to said input terminal and to said fine clock pulses for counting fine clock pulses beginning at each response pulse reception and storage means connected to said coarse clock pulses for capturing the count of said counter means in synchronism with said coarse clock pulses, the captured count associated with one of said response pulses being available at the time of generation of said recognizing signal.

3,940,765
ARRANGEMENT FOR A PASSIVE RESPONDER FOR A POSITION FINDING SYSTEM

Wilhelm Grafinger; Lutz Knabe, both of Munich; Guenter Engelmann, Erkerode, and Kurt Wagenlehner, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

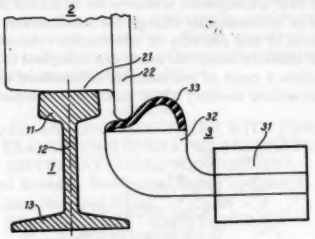
Filed May 9, 1974, Ser. No. 468,389

Claims priority, application Germany, May 14, 1973, 2324339

Int. Cl.² G01S 9/56; B61L 25/00

U.S. Cl. 343—6.8 R **10 Claims**

1. A passive responder for a position locating system for a wheeled railway vehicle moving on a track and in which said vehicle carries a microwave transmitter and receiver and transmits an interrogation signal to said passive responder the improvement wherein said responder includes a resonator member with several resonators which is mounted in the proximity of a rail of the track, a microwave antenna forming a part of said responder and pointed upwardly with its reciving



and radiation opening in immediate proximity to the head of the rail, and a cover member of a dielectric material covering the upper end of said antenna and mounted so that it is engaged by the wheels of said vehicle as they roll by the responder on the rail.

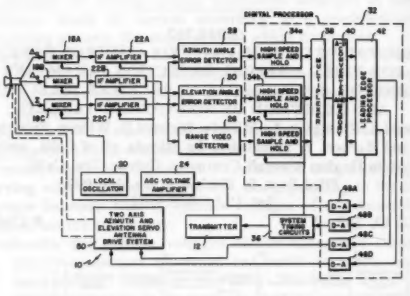
3,940,766
RANGE AND ANGLE DISCRIMINATOR FOR LEADING EDGE RADAR TRACKING

David C. Cross, and Dean D. Howard, both of Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1973, Ser. No. 349,517

Int. Cl.² G01S 9/02, 9/52

U.S. Cl. 343—7.4 **10 Claims**



5. In a conventional monopulse, closed loop, digital tracking system having a video return signal supplied from range and bipolar azimuth angle and elevation angle tracking channels, a leading edge tracker comprising:

automatic threshold means for deriving a threshold signal from the video signal;

means for sequentially sampling said video signal;

accumulating means for summing said samples over sequential intervals;

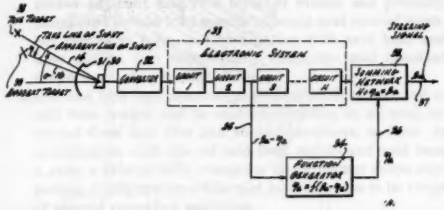
comparison means for comparing each summed sequential interval with said threshold value and indicating when any of said summed sequential intervals exceeds said threshold value; and

means for generating error signals from said indication to correct errors in tracking.

3,940,767
ELECTRONIC RADOME-ERROR COMPENSATION SYSTEM

Richard H. DeLano; Warren E. Mathews, both of Los Angeles; Edgar L. Arml, Palos Verdes Estates, and Keith W. Cochran, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 21, 1955, Ser. No. 483,206
Int. Cl.[2] G01S 9/02; H01Q 1/42
U.S. Cl. 343—16 R 13 Claims



1. In a radar-controlled system including a radome-covered antenna adapted to receive a radar beam and to develop direction signals in accordance with the direction of said received beam, and an electronic receiver adapted to receive and convert said direction signals derived from said antenna to develop output signals in a predetermined manner, wherein said radome-covered antenna subjects said beam to radome-error, and wherein said radome-error is functionally related to the offset angle of said beam, an electronic radome-error compensating system comprising: means coupled to said radar-controlled system and responsive to said direction signals for developing a signal representative of said offset angle of said beam, a function generator coupled to said means for receiving information indicative of said offset angle, and a compensation input terminal in said radar-controlled system, said function generator being coupled to said input terminal and adapted to generate a compensating signal which is at all times the negative replica of the effective radome-error contribution to said direction signals as related to the position of said input terminal, whereby said compensating signals are added to said direction signals, thereby rendering said output signals substantially independent of said radome-error.

3,940,768
PRECISE PULSE REPETITION FREQUENCY MEASURING DEVICE AND SIGNAL SORTER

Robert C. Olsen, and Frederick O. Stahlhut, both of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 7, 1969, Ser. No. 791,537
Int. Cl.[2] G01S 7/36
U.S. Cl. 343—18 E 5 Claims

1. An electronic signal processing device for performing precise real time measurement of the pulse repetition interval and frequency of pulse radar signals in a multi-signal environment, comprising:

input means for coupling to a radar receiver to receive said pulse radar signals therefrom;

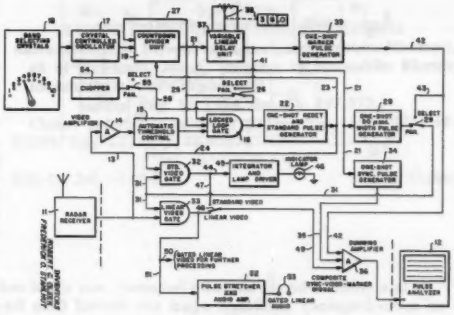
an automatic gating loop coupled to said input means, for receiving said pulse radar signals and separating said signals into discrete bands by pulse repetition interval and frequency;

synchronizing pulse generating means having input means coupled to said automatic gating loop, for producing video synchronizing pulses at its output means in response to control signals from said automatic gating loop;

a first video gating means having first and second input means and an output means, said first input means thereof being coupled to said automatic gating loop for receiving standard video pulses therefrom for each video pulse train within a selected one of said discrete bands, and said second input means thereof being for receiving enabling signals to control the passage of said standard video pulses from said first input means thereof to said output means thereof;

a second video gating means having first and second input means and an output means, said first input means thereof being coupled to said input means for receiving said pulse radar signals from said radar receiver, and said second input means thereof being coupled in parallel with said second input means of said first gating means for receiving said enabling signals to control the passage of said pulse radar signals from said first input means thereof to said output means thereof;

video gating signal generating means having input means coupled in parallel with said input means of said synchro-



nizing pulse generating means to said automatic gating loop for receiving said control signals therefrom, and having output means switchably coupled to said second input means of each of said first and second video gating means, for producing said enabling signals at said output means thereof in response to said control signals from said automatic gating loop;

adjustably linear delay means having input means coupled to said automatic gating loop for receiving said control signals therefrom, having manually adjustable control means for determining the length of delay to be introduced by said delay means between the receipt of said control signals and the production of corresponding output signals, and having output means for providing the delayed said corresponding output signals thereat;

marker pulse generating means having input means coupled to said output means of said adjustable linear delay means for receiving said delayed corresponding output signals therefrom and producing a marker pulse of relatively short duration in response to each such signal, and having output means for providing said marker pulses thereat, said output means thereof being switchably coupled to said second input means of each of said first and second video gating means for providing said marker pulses as enabling signals thereto; and

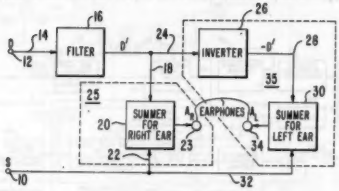
summing amplifier means having a first input means coupled to said output means of said synchronizing pulse generating means for receiving said video synchronizing pulses therefrom, a second input means coupled to said output means of said marker pulse generating means for receiving said marker pulses therefrom, and a third input means switchably coupled to the respective output means of said first and second video gating means for alternatively receiving said standard video pulses from said first video gating means and said unknown pulse radar signals from said second video gating means, and having output means for providing thereat a composite signal comprised of said synchronizing pulses, said video pulses, and said marker pulses for coupling to a pulse analyzing display means.

3,940,769

BINAURAL AUDITORY PRESENTATION APPARATUS

Samuel Mark Sherman, Moorestown, and Leman Goldman, Jr., Pennsauken, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 434,926
Int. Cl.² G01S 3/72, 9/22
U.S. Cl. 343—113 R 5 Claims



1. In a system wherein an audio-frequency sum signal and an audio-frequency difference signal are derived from frequency-distributed radio-frequency (RF) signals from at least one remote source, said RF signals being received at a plurality of reception means having a specified reference axis, a binaural auditory presentation apparatus comprising:

input means for receiving said sum signal and said difference signal;

filter means receptive of said difference signal for modifying the amplitude and phase of each frequency component of said difference signal;

first presentation means receptive of said sum signal and said filtered difference signal for deriving from said sum signal and said filtered difference signal a first audio-frequency output signal representative of said RF signals from said remote sources;

means, receptive of said filtered difference signal, for inverting said filtered difference signal; and

second presentation means, receptive of said sum signal and said inverted filtered difference signal, for deriving from said sum signal and said inverted filtered difference signal a second audio-frequency output signal representative of said RF signals from said remote sources;

said filter means modifying the amplitude and phase of each of said frequency components of said difference signal such that;

each of the frequency components of said first output signal representative of the RF signals from each respective individual remote source maintain substantially the same time differential between a presentation by said first presentation means and a presentation by said second presentation means of the corresponding frequency component of said second output signal, where each of said time differentials is a function of the position of said respective individual remote source with respect to said reference axis and each of said time differentials is of such a duration as to be binaurally discernable

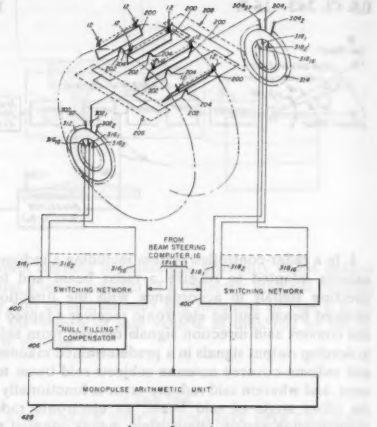
and such that the amplitude ratio of each corresponding frequency component of said first and second audio-frequency output signals representative of the RF signals from each respective individual remote source is a function of the position of said respective individual remote source with respect to said reference axis.

3,940,770

CYLINDRICAL ARRAY ANTENNA WITH RADIAL LINE POWER DIVIDER

Matthew Fassett, Billerica, Mass., and Quirino Balzano, Pembroke Pines, Fla., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 24, 1974, Ser. No. 463,499
Int. Cl.² H01Q 19/06, 3/26
U.S. Cl. 343—754 5 Claims



1. In a conformal antenna, the combination comprising:

a. a plurality of antenna elements arranged in rows about the periphery of the antenna;

b. a radio frequency lens having a plurality of output ports disposed about the periphery of such lens and a plurality of input ports disposed centrally within such periphery of the lens;

c. a switching network means, having a plurality of output terminals connected to the plurality of input ports and having four input terminals, for electrically coupling such four input terminals to a selected set of four of the plurality of input ports; and

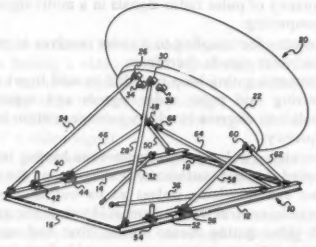
d. means for coupling alternate ones of the four input terminals with like polarity and adjacent ones of such four input terminals with opposite polarity.

3,940,771

VARIABLE ANGLE SUPPORT APPARATUS

Charles E. Wild, Anna, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 21, 1975, Ser. No. 569,916
Int. Cl.² H01Q 1/08, 3/02
U.S. Cl. 343—766 8 Claims



1. Support adjustment apparatus comprising, in combination:

base means having a generally horizontal reference;

load means to be supported and movable with respect to said base means and having a range of normal operating positions between 0° and 90° with respect to said base means;

first and second rigid members pivotally connected to both said base means and the portion of said load means closest to said base means when said load means is in its range of normal operating positions;

third rigid member means pivotally connected to said base means adjacent said first member means and pivotally connected to said load means adjacent said second member means to form, in combination with said load and base means, two substantially triangular and constant shape supporting configurations;

fourth and fifth rigid member means pivotally connected to said base means and to said load means, in an area removed from said first and second members, to form in combination with one of said load means and said base means, a substantially triangular and constant shape supporting configuration while said load means is in its range of normal operating positions;

sixth and seventh member means pivotally connected to said base means and pivotally connected adjacent respectively said first and second members to form alterable triangular configurations between the associated members and one of said load means and said base means; and

means for adjusting said sixth and seventh members to change the alterable triangular configurations and simultaneously change the operating position of said load means with respect to said base means.

3,940,772

CIRCULARLY POLARIZED, BROADSIDE FIRING TETRAHELICAL ANTENNA

Oded Ben-dov, Medford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 8, 1974, Ser. No. 522,132
Int. Cl.² H01Q 1/36
U.S. Cl. 343—853 **7 Claims**

1. An antenna for radiating circularly polarized signals over a given range of frequencies omnidirectionally about and broadside a support mast comprising:

four conductors helically wound about and spaced from the support mast a given radial distance from the center of the support mast with each conductor of said four conductors spaced about 90° of arc about the support mast from the adjacent two of said four conductors.

means for coupling equal power signals at the same frequency within said given range of frequencies to said four conductors so that in a plane perpendicular to the axis of the support mast the phase of the signals at one of said four conductors is 180° out of phase with the phase of the signals at the two of said four conductors adjacent thereto and is in phase with the phase of the signals at the one of said four conductors alternate therefrom,

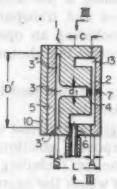
said four conductors at a pitch angle and at a given radial distance such that each of said four conductors makes a complete turn about said support mast in a length along said four conductors about equal to two wavelengths at a frequency within said given range of frequencies whereby circularly polarized signals are radiated substantially broadside said support mast.

3,940,773

LIQUID DROPLET WRITING MECHANISM

Akira Mizoguchi; Kiyoshi Yamamori, and Yasutaka Hiromori, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Aug. 14, 1974, Ser. No. 497,372
Claims priority, application Japan, Aug. 16, 1973, 48-92199; Aug. 17, 1973, 48-92578
Int. Cl.² G01D 15/16
U.S. Cl. 346—140 R **12 Claims**



1. In an arrangement for applying liquid droplets to a surface, comprising a liquid applying unit including a chamber having an intake channel connected to a liquid supply container and a discharge channel through which the liquid is discharged from the chamber into the atmosphere, means for producing short duration pressure increases in the liquid in the chamber, the chamber having means dividing the chamber into an outer chamber portion adjacent to the discharge channel and an inner chamber portion, a connecting channel in the dividing means connecting the outer and inner chamber portions, the connecting channel being axially aligned with the discharge channel and the intake channel being communicated with the outer chamber portion, the inner chamber portion having a larger diameter portion in contact with the pressure producing means and a smaller diameter portion adjacent to the connecting channel, the improvement comprising:

an intermediate reservoir chamber communicated with said outer chamber portion and with said intake channel; and

the ratio of the diameter of said larger diameter portion to the distance between the outer end of said discharge channel and said pressure producing means ranges from 0.15 to 1.0 inclusive,

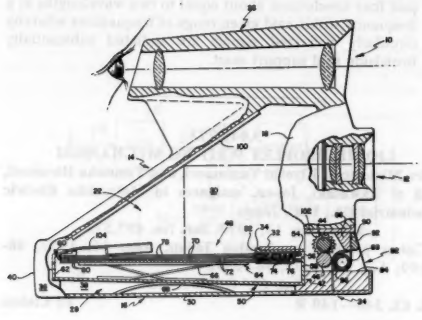
whereby the liquid discharged through said discharge channel is replenished with the liquid in said intermediate reservoir chamber to enable the liquid in said outer chamber portion to respond to the rapid variations of said short duration pressure increases.

3,940,774

OPAQUE SHADE

Andrew S. Ivester, Charlestown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1974, Ser. No. 466,371
Int. Cl.² G03B 17/50
U.S. Cl. 354—83 45 Claims



1. Photographic apparatus for processing an exposed film unit of the type including a plurality of superposed layers including photosensitive and transparent layers, and a processing composition including an opacifying agent which is adapted to be spread across the photosensitive layer comprising:

means for supporting the film unit in position for exposure of the photosensitive layer;

means for advancing the film unit subsequent to exposure away from said exposure position;

pressure-applying means including a pair of juxtaposed members between which the exposed film unit is adapted to be advanced leading edge first during spreading of the processing composition;

means defining an exit opening located forwardly of said pressure-applying means through which the film unit is adapted to be advanced to the exterior of said photographic apparatus; and

opaque means mounted adjacent said exit opening for movement between non-extended and extended positions, said opaque means being movable toward said extended position with the leading edge of the film unit as it passes through said exit opening for covering in lighttight relation at least a predetermined area of the transparent layer as it passes from said exit opening sufficient to prevent ambient actinic light from being transmitted by portions of the transparent layer forward of said pressure-applying means to portions of the transparent layer rearwardly of said pressure-applying means, and toward said non-extended position while the predetermined area remains outside said photographic apparatus for progressively exposing the predetermined area to the ambient light.

3,940,775

MULTIPLE EXPOSURE OPTICAL RECORDING METHOD AND APPARATUS

Jurij Bodnar, 41 E. Third Ave., San Mateo, Calif. 94401

Continuation-in-part of Ser. No. 344,107, March 23, 1973, abandoned. This application Apr. 8, 1974, Ser. No. 458,725
Int. Cl.² G03B 1/00
U.S. Cl. 354—122 7 Claims

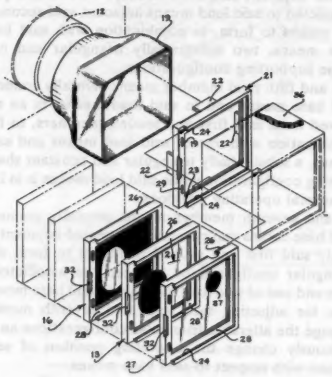
1. Apparatus providing a plurality of light modifying elements for individual positioning in front of the light entrance lens of a camera comprising:

a. a light shade;

b. means for removably securing said light shade to said camera in front of said lens at a position in which all light passed into said camera by said lens first passes through an entrance opening of said light shade; and

c. a support holder for said plurality of light modifying elements detachably secured to said light shade in front of said entrance opening, said support holder including for each of said light modifying elements:

1. a frame for supporting same;



2. means pivotally securing each of said frames to said holder for movement of said frame and the light modifying element supported thereby between an inactive position projecting outward of said holder into said light shade adjacent a side thereof and out of the field of view of said lens and an active position within said holder and in front of said entrance opening so that said light modifying element is in the field of view of said lens;

3. all of said frames and light modifying elements supported thereby being pivotable into positions within said holder for protection thereby whenever said holder is detached from said light shade.

3,940,776

MOTOR-DRIVE CONTROLLING APPARATUS

Isao Kondo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 13, 1974, Ser. No. 469,678
Claims priority, application Japan, May 18, 1973, 48-55223; May 30, 1973, 48-60710; Oct. 4, 1973, 48-111688
Int. Cl.² G03B 1/18
U.S. Cl. 354—173 12 Claims

1. A motor-drive controlling apparatus used in attachment with a still camera having a shutter releasing mechanism and a film winding mechanism to permit alternatively a single frame photographing operation and a continuous photographing operation to be carried out with film charged therein, comprising:

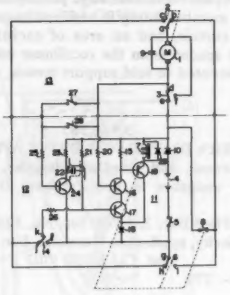
an operating switch for initiating operation of the motor-drive controlling apparatus:

a motor circuit coupled to said operating switch and including a drive motor operatively coupled to and selectively driving said shutter releasing mechanism and said film winding mechanism;

a shutter switch coupled to said shutter releasing mechanism and actuated interlockingly with the operation of said shutter releasing mechanism;

a timer circuit coupled to said shutter switch and operating in response to the respective operations of said shutter switch and said operating switch, said timer circuit in-

cluding means responsive to the termination of an advance of film for changing its output condition at a predetermined time after the termination of an advance of film caused by, for example, termination of a charged film, the occurrence of a film-catch problem, or the like; and



a control circuit coupled to said shutter switch and to said timer circuit and operating in response to the operation of said shutter switch and said output condition of said timer circuit for controlling the energization of said motor.

3,940,777

CASING OF A MECHANICAL MOUNTING FOR THE INTERCHANGEABLE LENSES AND A CAMERA SYSTEM USING THE SAME

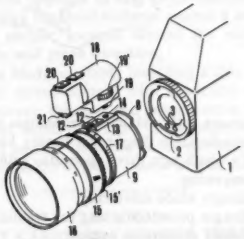
Yoshio Komine, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Aug. 21, 1974, Ser. No. 499,161

Claims priority, application Japan, Aug. 27, 1973, 48-100412

Int. Cl.² G03B 3/00, 13/02

U.S. Cl. 354—197 **27 Claims**



1. In a camera system having a camera body unit with mounting-demounting means which is disposed on the camera body unit for mounting and demounting a lens unit, electric signal output means for providing electrical signals and camera electrical signal interconnecting means having one end electrically connected to said output means and the other end electrically connected to said mounting-demounting means, and an interchangeable lens unit which is selectively attachable to and detachable from said mounting-demounting means on the camera body unit, said lens unit comprising:

photographing optical means forming images;

a housing for carrying said optical means, apertures being provided at both ends of the optical means along the direction of the optical axis;

mounting-demounting means disposed at least at one end of the lens unit housing to engage with and disengage from the mounting-demounting means disposed on the camera body unit for mounting the lens unit on the camera body unit; and lens unit electric signal interconnecting means provided inside the lens unit housing having one end being arranged for pressable contact with the electric signal interconnecting means provided in the camera body unit, when the two mounting-demounting means respectively provided on the camera body unit and the lens unit are mated with each other, said lens unit electrical signal interconnecting means having the other end being disposed to appear on an outside wall surface of the lens unit housing, said electric signal interconnecting means of the lens unit being provided with terminal pressing means for pressing at least one of the ends of the lens unit electric signal interconnecting means outwardly of the lens unit housing for bringing said end into contact with the electric signal camera interconnecting means, and wherein the electrical output of the output means in the camera body unit is passed by the camera interconnecting electric signal means and is arranged to be provided external to the lens unit by way of the lens unit electric signal interconnecting means.

3,940,778

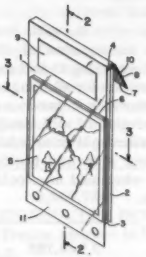
PHOTOGRAPH AND NEGATIVE HOLDER

Jules M. Craig, and Philip Karsted, both of Shingle Springs, Calif., assignors to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Oct. 7, 1974, Ser. No. 512,471

Int. Cl.² G09F 1/10

U.S. Cl. 354—282 **2 Claims**



1. A photograph and negative holder for displaying a developed photograph and a negative comprising:

a first sheet of transparent material; a second sheet of transparent material in superposed relation with respect to the first sheet;

an expandable bellows bonding strip interposed between the first sheet and the second sheet and attached along the edges of the first sheet and the edges of the second sheet;

whereby the bonding strip, the first sheet and the second sheet define a single envelope having a single opening of sufficient size for receiving the photograph and the negative in contact with each other and in superposed relation to each other;

a hinged flap having a first end and a second end, the first end attached to the first sheet, which overlaps the opening;

a means for securing the hinged flap, at the second end, to the second sheet;

a writing surface attached to the first sheet and in such a position so as not to obstruct the view of the photograph; and

a third sheet attached to the edge of the first sheet and opposite the opening, having a plurality of holes in the third sheet for mounting in a loose-leaf binder.

3,940,779

INTERCHANGEABLE FINDER TYPE CAMERA

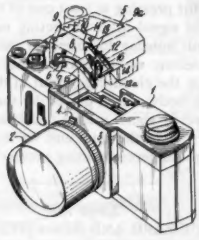
Yoshio Kuromoto, Toyonaka; Toshio Kobori, Sakai, and Masaru Ohba, Saki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 27, 1974, Ser. No. 455,450

Claims priority, application Japan, Mar. 28, 1973, 48-35295

Int. Cl.² G03B 13/00, 7/00

U.S. Cl. 354—224 11 Claims



1. An exchangeable viewfinder type single lens reflex camera comprising:

a camera body;

an objective lens exchangeably mountable on said camera body and having a rotatable diaphragm ring;

a viewfinder housing exchangeably mountable on said camera body, including,

an exposure control device,

an interlocking member movable between a first position preventing the transmission of diaphragm information from said diaphragm ring to said exposure control device and a second position for allowing such transmission; and

blocking means movable between a first position for preventing the mounting of said viewfinder housing on said camera body when said interlocking member is in said first position and a second position for allowing such mounting only when said interlocking member is in said second position.

3,940,780

LIGHT-INTERCEPTING DEVICE FOR CAMERAS HAVING FOCAL PLANE SHUTTERS

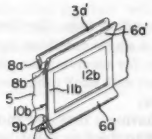
Akihiko Sato, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Oct. 10, 1974, Ser. No. 513,863

Claims priority, application Japan, Oct. 16, 1973, 48-119337

Int. Cl.² G03B 9/28, 17/00

U.S. Cl. 354—241 8 Claims



1. A light-intercepting device in a camera having a pair of picture-taking openings provided in a camera body and a focal plane shutter curtain situated between the picture-taking openings, the device preventing light from passing through the clearance between the shutter curtain and the camera body, the device comprising:

a pair of resilient, opaque, planar light-intercepting members each having a rectilinear edge portion, the edge portion having a length greater than the dimension of the picture-taking opening parallel to the direction of movement of the shutter curtain; and

support means for supporting each of said light-intercepting members, the rectilinear edge portion of each light-intercepting member being in resilient engagement with the shutter curtain, and an area of each light-intercepting member spaced from the rectilinear edge portion being fixedly secured to said support means.

3,940,781

CAMERA DIAPHRAGM DRIVE APPARATUS

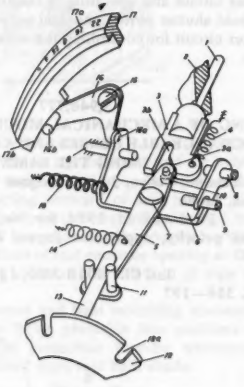
Wolfgang Krause, and Friedhelm Spanke, both of Gorlitz, Germany, assignors to Veb Pentacon Dresden, Dresden, Germany

Filed Dec. 2, 1974, Ser. No. 528,707

Claims priority, application Germany, Dec. 4, 1973, 175072

Int. Cl.² G03B 9/02

U.S. Cl. 354—272 12 Claims



1. In a camera with a shutter mechanism and an objective lens with preselectable diaphragm having blades therein the provision of a diaphragm drive apparatus within said objective lens and comprising:

a. a diaphragm blade drive ring;

b. a diaphragm preselector ring for manual preselection of the required diaphragm setting;

c.

d. a release mechanism operable by said release plunger;

e. a drive lever having a cam follower provided on an arm thereof for effecting a driving connection between said release mechanism and the diaphragm blade drive ring, means for connecting said preselector ring to said drive lever for transmitting the preselected diaphragm setting to said drive lever.

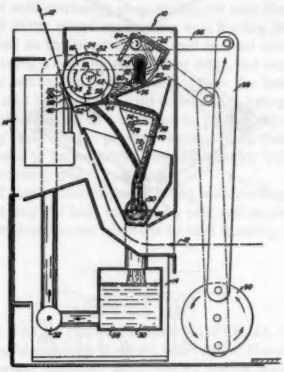
f. a cam surface on said release mechanism having one portion for effecting movement of the cam follower in engagement with said cam surface to drive said diaphragm blade drive ring and a second portion which does not impart movement to the cam follower, whereby on operation of the release plunger, the initial movement of the release mechanism on the driver lever effects closure of the diaphragm to its manually preselected position and on subsequent movement permits release of the camera shutter mechanism without further movement of the diaphragm.

3,940,782

DIAZOTYPE DEVELOPING APPARATUS WITH LIQUID METERING ASSEMBLY

Robert P. Neeb, Wake Forest; Henry W. Patrick, and Ray H. Mumford, both of Raleigh, all of N.C., assignors to Diazit Company, Inc., Youngsville, N.C.

Filed Sept. 10, 1974, Ser. No. 504,752
Int. Cl.² G03D 5/06
U.S. Cl. 354—318 16 Claims



1. Apparatus for developing exposed diazotype sheet material by applying a predetermined amount of liquid developer to the sheet material, said apparatus comprising:

a frame;

an applicator roller mounted for rotation in a given direction upon the frame, said roller having a generally cylindrical surface;

a metering blade assembly mounted upon the frame and urged against the surface of the applicator roller;

means for supplying liquid developer at a first area of the roller surface located before the metering blade assembly in a direction opposite to said given direction; and

means for urging the sheet material against a second area of the roller surface located beyond the metering blade assembly in said given direction;

said metering blade assembly including a fine mesh screen biased into direct contact with a portion of the roller surface between the first and second areas for metering the supplied liquid developer to establish an accurately determined amount of liquid developer upon the surface of the roller as the surface passes across the screen.

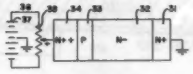
3,940,783

MAJORITY CARRIERS-VARIABLE THRESHOLD RECTIFIER AND/OR VOLTAGE REFERENCE SEMICONDUCTOR STRUCTURE

Bohumil Polata, Los Altos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Feb. 11, 1974, Ser. No. 441,675
Int. Cl.³ H01L 29/90
U.S. Cl. 357—13 6 Claims

1. A rectifier and reference structure utilizing majority charge carriers comprising: a one-conductivity support layer and means for making electrical contact to said support layer, a second one-conductivity layer having a concentration differing from and carried by the support layer, an opposite-conductivity layer carried by the second layer to form a first junction, a third one-conductivity layer carried atop the opposite-conductivity layer to form a second junction and means for making electrical contact to said third layer, said opposite-conductivity layer having a decreasing impurity concentration from said second junction to said first junction wherein the second one-conductivity, opposite-conductivity, and third one-conductivity layer impurity concentrations and the opposite-conductivity layer thickness are selected to form a first depletion region at said first junction, so that when voltage means of one polarity is applied between said contacts said structure opposes current flow until a voltage magnitude is reached which causes said first depletion region to extend through the predetermined thickness of the opposite conductivity layer to intercouple said second and third one-conductivity layers, said impurity concentrations being further selected to provide said first depletion region intercoupling before avalanche and Zener breakdown of said first junction,



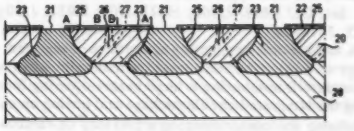
and wherein said one-conductivity, opposite-conductivity and third one-conductivity layers have impurity concentrations further selected to form a second depletion region at said second junction, so that when voltage means of opposite polarity is applied between said contacts said structure opposes current flow until a voltage magnitude is reached which causes said second depletion region to extend through said predetermined thickness of the opposite-conductivity layer to intercouple said second and third one-conductivity layers, said impurity concentrations being further selected to provide said second depletion region intercoupling before avalanche and Zener breakdown of said second junction.

3,940,784

SEMICONDUCTOR DEVICE

Daniel Diguet, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1974, Ser. No. 466,627
Claims priority, application France, May 4, 1973, 73.16132
Int. Cl.² H01L 29/06, 29/161
U.S. Cl. 357—20 20 Claims

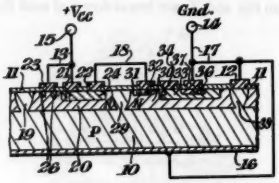


1. A semiconductor device comprising a substrate, a monocrystalline semiconductor layer disposed on said substrate and comprising at least one semiconductor circuit element, said semiconductor layer having a first part located at the substrate side of said layer and a second part located at the surface of said layer, said first part comprising semiconductor material differing in chemical composition from that of said second part, said layer further comprising at least one region that is doped with a diffused impurity material and has a width dimension that first locally increases and then decreases in the direction from the surface of said semiconductor layer toward said substrate.

3,940,785
SEMICONDUCTOR I.C. WITH PROTECTION AGAINST REVERSED POWER SUPPLY

Robert C. Genesi, Sterling, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed May 6, 1974, Ser. No. 467,179
Int. Cl.² H01L 27/04; H02H 7/20, 3/18; H01L 29/48
U.S. Cl. 357—48 7 Claims



1. A semiconductor integrated circuit providing protection against a reversed power supply connection having a semiconductor substrate of one conductivity type, a plurality of spaced regions in said substrate each being adjacent to a common face of said substrate and each containing dopant impurities of a conductivity type opposite to said one type, a resistor being formed in a portion of one of said regions, a transistor being formed in a second of said regions, a conductor network connective means, including a terminal connected to said substrate; a terminal adapted to be connected to a fixed d.c. voltage source with respect to said substrate terminal and a connection between said resistor and said fixed voltage terminal, for the purpose of completing the connections in said semiconductor integrated circuit; wherein the improvement comprises a Schottky diode being formed by a metal layer contacting another portion of said one region, said metal layer being electrically connected to said fixed voltage terminal.

3,940,786
DEVICE FOR CONNECTING LEADLESS INTEGRATED CIRCUIT PACKAGE TO A PRINTED CIRCUIT BOARD

William Samuel Scheingold, Palmyra; Harold Lawrence Purdy, Hummelstown, and Frank Christian Youngfleish, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

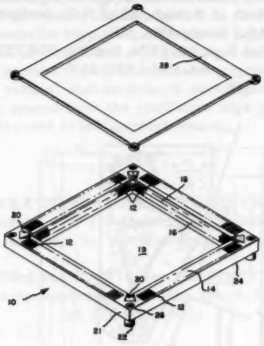
Continuation-in-part of Ser. No. 445,045, Feb. 22, 1974, Pat. No. 3,877,064. This application Feb. 4, 1975, Ser. No. 546,948
Int. Cl.² H01L 23/02; H02B 1/04; H05K 1/00
U.S. Cl. 357—74 1 Claim

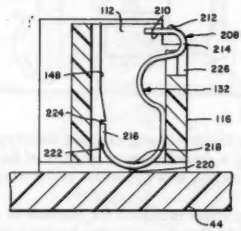
1. A device for connecting a leadless integrated circuit package to a printed circuit board, which comprises:

a. a square frame having a large center opening for receiving the integrated circuit package and having on each side defining the center opening a plurality of cavities which open out onto the inside face wall of the sides;

b. a plurality of contacts each having a lower portion resembling a S and an upper portion being doubled back to provide a double bend and a horizontally flat end, said contacts each having an upper contact point on the horizontally flat end and a lower contact point on the outside surface of the lowest-most curve of the S, said upper contact point adapted to engage a pad on the integrated circuit package which may be placed in the center opening in the frame and the lower contact point adapted to engage a pad on the printed circuit board thereby providing an electrical connection between the integrated circuit package and the printed circuit board; and

c. a bracket positionable on top of the frame and a integrated circuit package which may be placed in the center opening, said bracket and frame having aligned means



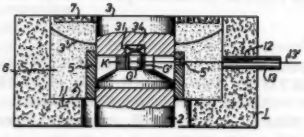


thereon to fasten the bracket to the frame thereby securing the integrated circuit package to the frame.

3,940,787
MOUNTING FOR LOCKING DISC SHAPED SEMICONDUCTOR ELEMENT IN A HOUSING

Heinz Juchmann, Belecke, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed June 19, 1974, Ser. No. 480,847
Claims priority, application Germany, June 28, 1973, 2332896
Int. Cl.² H01L 23/16
U.S. Cl. 357—75 5 Claims



1. In a disc-shaped semiconductor arrangement including: an annular ceramic housing having a hollow cylindrical interior and having an internal flange adjacent one end face thereof; first and second contacting discs having identical diqmeters; a semiconductor element interposed between said contacting discs and including a support disc disposed in the housing to be in contact with said first contacting disc, and having a diameter equal to that of said contacting discs, and a disc-shaped semiconductor body fastened via one of its end surfaces to the support disc and having at least one contact electrode fastened to the other of its end surfaces to be in contact with said second contacting disc; and an electrically insulating centering ring having an inner diameter matching

the diameter of said support disc and said contacting discs and provided with a passage for a connecting lead, said centering ring being disposed to center the contacting discs and the semiconductor element in the housing, the improvement wherein said arrangement further comprises:

a first sheet metal supporting ring having its inner edge soldered to the perimeter of said first contacting disc and bearing against said internal flange of said housing, said first ring thereby supporting the unit formed by said contacting discs and said semiconductor element and one end of said centering ring resting on said first ring;

a second sheet metal supporting ring having its inner edge soldered to the perimeter of said second contacting disc and having a tooth-shaped outer edge, the outer diameter of said second ring being greater than the interior diameter of said housing and said second ring being press-fitted into said housing in a manner to cause said second contacting disc to be pressed against said semiconductor body and to be supported by the interior wall surface of said housing; and

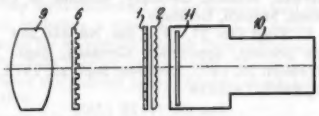
a mass of elastic cast material filling said housing interior for connecting the unit formed by said contacting discs and said semiconductor element to said housing.

3,940,788

COLOR TELEVISION CAMERA OPTICAL SYSTEM

Haruo Abe; Masaichiro Konishi, and Teruo Hosokawa, all of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 6, 1973, Ser. No. 422,237
Claims priority, application Japan, Jan. 16, 1973, 48-6588
Int. Cl.² H04N 9/07
U.S. Cl. 358—43 **2 Claims**



1. In a color television camera system including a photoelectric converting face, an optical system for forming a color modulated image on said photoelectric converting face comprising:

an objective lens disposed in front of said photoelectric converting face so as to focus an image of an object thereon;

a color encoding filter disposed between said objective lens and said photoelectric converting face, said color encoding filter having a plurality of parallel color stripes;

a lenticular lens member disposed between said color encoding filter and said photoelectric converting face, said lenticular lens member having a plurality of side by side longitudinally extending cylindrical lenses parallel with said color stripes and being so located that an image of each color stripe is individually focussed on said photoelectric converting face by a corresponding one of said cylindrical lenses, respectively; and

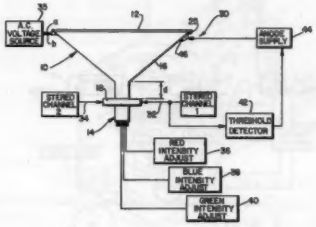
a phase grating disposed in front of said color encoding filter having a transparent substrate and transversely spaced phase retarding, lontigudinal, transparent stripes disposed on a face of said substrate, said transparent stripes being parallel with said color stripes.

3,940,789

MULTICOLOR DISPLAY FOR THE VISUAL-AESTHETIC PORTRAYAL OF ELECTRIC SIGNALS

John E. Kratz, and Bruce W. Williams, both of Richmond, Va., assignors to Kew, Incorporated, Richmond, Va.

Filed July 13, 1973, Ser. No. 378,964
Int. Cl.² H04N 9/02
U.S. Cl. 358—82 **20 Claims**



1. An apparatus for displaying colored aesthetic patterns of the information in two random electrical signals comprising:

a. a source of said random signals;

b. a color cathode ray tube, having a neck, a screen and a transition between said neck and said screen, said tube having a high voltage electrode and containing three electron beam guns within said neck for producing three electron beams each associated with a different one of three primary colors within the screen is adapted to be struck by said three electron beams, said screen having a plurality of phosphor dots of each of the three primary colors; and

c. a deflection yoke coupled to said electrical signals for deflecting the electron beams of said guns in response to said two electrical signals, said deflection yoke having a normal position on the neck of said cathode ray tube for allowing each dot to be struck by the electron beam from the gun of its associated color, said deflection yoke being positioned in back of its normal position to such a degree that substantial regions of dots of all three primary colors may be struck by the electron beams from any of the three guns.

11. An apparatus for displaying colored aesthetic patterns of the information in two stereophonic electrical signals comprising:

a. a source of said signals;

b. a color cathode ray tube having a neck, a screen, an axis perpendicular to the screen, a transition between said neck and said screen, three electron guns within said neck for producing three electron beams each associated with a different one of three primary colors, wherein the screen has a plurality of phosphor dots of each of the three primary colors and wherein any particular dot is normally adapted to be struck by its color associated electron beam;

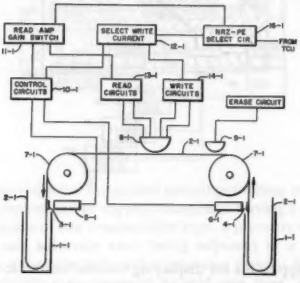
c. means connected to the source for deflecting the electron beam from any of the three guns in response to the electrical signals; and

d. means for producing an a.c. field within the tube of sufficient strength to bend the electron beams to such a degree that throughout the screen substantial regions of dots of all three primary colors may be struck by the electron beams from any of the three guns while the beam from any of the guns is being deflected in response to the electrical signals.

3,940,790
SYSTEM FOR CONTROL OF READ/WRITE ON MAGNETIC TAPE

Walter J. Conroy, Billerica; Robert S. Prescott, Lexington, and George G. Proulx, Bedford, all of Mass., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Continuation of Ser. No. 331,758, Feb. 13, 1973. This application July 17, 1974, Ser. No. 489,286
Int. Cl.² G11B 5/09
U.S. Cl. 360—39 7 Claims



1. A control system for a computer tape transport system capable of utilizing various types of magnetic tapes and encoding techniques, and capable of operating in any single one of a plurality of modes, said control system optimally controlling read/write operations under various sets of conditions and comprising:

a. reflective patch means affixed to computer compatible magnetic tape mounted on said tape transport system, said patch means arranged in a preselected manner forming a code which identifies the type of tape that is mounted on the tape transport system;

b. electro-optical sensing means responsive to the coded arrangement of said reflective patch means for producing coded electric signals indicative of the type of tape mounted on said computer tape transport system;

c. a plurality of electrical control circuits coupled to said electro-optical sensing means responsive to selected ones of the coded electrical signals, said plurality of electrical circuits producing electrical control signals for optimally controlling said computer tape transport system in any one of the plurality of modes of operations, said plurality of control electrical circuits further comprising:

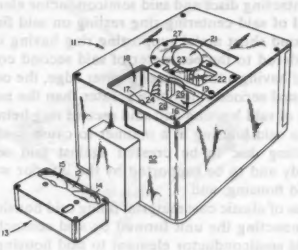
1. a plurality of inverting amplifying networks each having inverter input and output means for selectively introducing electrical signals to said plurality of inverting amplifying networks and selectively abstracting inverted amplified electric signals from said plurality of inverting amplifying networks; and,

2. a plurality of AND gate networks each having at least one AND gate input means and at least one AND gate output means, and wherein said inverter input means are coupled one each to an AND gate output means, and with said predetermined ones of said AND gate input means adapted for receiving a selected one of a plurality of electric signals, each selected signal representing a selected one of a predetermined number of functions indicative of the state of said tape drive, and wherein predetermined ones of said inverter output means are coupled to an AND gate input means of predetermined AND gates.

3,940,791
MAGNETIC TAPE TRANSPORT

Helmut L. Kayan, Redwood City, and Alfred F. Stahler, San Jose, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Aug. 19, 1974, Ser. No. 498,459
Int. Cl.² G11B 15/00, 23/04
U.S. Cl. 360—95 25 Claims



1. In a rotary head type magnetic recording and/or reproducing apparatus having a cylindrical guide drum within which the rotary head is rotated, the combination comprising:

means for mounting a tape cassette in the apparatus;

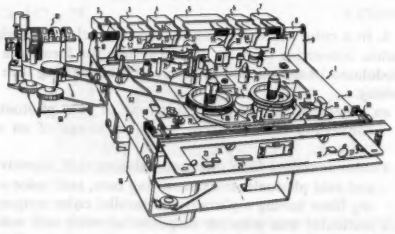
a housing and differential air pressure means therefor for communicating with the mounted cassette and encompassing at least a portion of the guide drum to pull an elongated loop of tape from the cassette with a portion of the loop wrapped helically around the guide drum in the region of the rotary head; and

means operable at a predetermined length of the loop of tape to separate the opposite shanks of the loop.

3,940,792
TAPE RECORDER, PARTICULARLY CASSETTE RECORDER

Karl Herleth, Munich, Germany, assignor to Uher Werke Munchen, Munich, Germany

Filed Feb. 27, 1974, Ser. No. 446,264
Claims priority, application Germany, Sept. 28, 1973, 2348941; Sept. 28, 1973, 2348940; Sept. 28, 1973, 2348938; Sept. 28, 1973, 2348939
Int. Cl.² G11B 15/00
U.S. Cl. 360—96 27 Claims



1. A tape recorder, particulalry a cassette recorder, comprising a recorder housing, said recorder housing comprising therein tape reels for rewinding and unwinding a tape, sound recording and reproducing means, a driving system for moving the reels in two tape run directions, control buttons designed to set an appropriate function sequence of an associated electric control system having contacts corresponding to said control buttons and which controls the given function sequence in accordance with the setting of said control buttons, the control buttons being arranged on one side of said re-

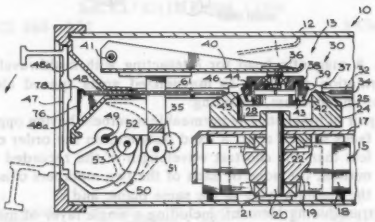
corder housing, slides positioned on said recorder housing and which extend thereacross, mechanically connecting said control buttons to said electric control system contacts transmitting the setting movements of said control buttons to the corresponding contacts of the electric control system, said slides having driving facilities and releasing facilities which move given mechanical recorder parts to the positions corresponding to the function sequences corresponding to the setting of said control buttons, a braking system for the reels including means for mounting said braking system on the recorder and means for connecting said braking system to the slides so that the braking system is actuated by selected settings of the slides.

3,940,793

DISK POSITIONING MEANS FOR A FLEXIBLE MAGNETIC DISK DRIVE APPARATUS

Lewis W. Bleiman, Northridge, Calif., assignor to Pertec Corporation, Chatsworth, Calif.

Filed Dec. 18, 1974, Ser. No. 533,809
Int. Cl.² G11B *5/016, 25/04*
U.S. Cl. 360—99 **7 Claims**



1. An apparatus for rotating a flexible magnetic disk contained in a flat flexible cartridge, said apparatus comprising:
a housing;
disk clamp means mounted in said housing, said disk clamp means including a drive hub and a clamping member mounted for movement relative thereto between an open spaced apart position and a closed clamping position;
an entrance slot defined in said housing elongated in a first direction;
stationary guide means mounted in said housing for guiding a cartridge inserted through said entrance slot along a defined plane extending between said clamping member and drive hub when in said open position;
positioning means mounted adjacent to said entrance slot providing a fixed reference surface extending substantially transverse to and intersecting said defined plane; and
ejector means supported in said housing for resiliently bearing against the leading edge of said cartridge to urge the trailing edge of said cartridge against said fixed reference surface.

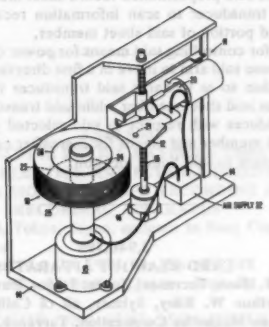
3,940,794

STACKED FLEXIBLE RECORD DISK STORAGE APPARATUS HAVING ENHANCED DISK SEPARATION

Donald E. Griffiths, Longmont, Colo.; Joseph H. Koestner, Hope Well Junction, N.Y., and David G. Norton, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 19, 1974, Ser. No. 480,990
Int. Cl.² G11B *5/82, 25/04, 5/54*
U.S. Cl. 360—99 **135 Claims**

1. The method of operating signal storage apparatus having a stack of closely spaced-apart coaxial compliant circular record disks having a common axis for rotation at the center of all said circular record disks,
the steps of:
rotating said stack of disks as a unit about said common axis;
applying first axial separating forces at a given radius to one of said disks to induce a primary bending mode in said stack;



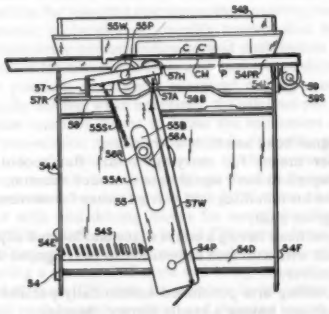
applying additional axial separating forces in a predetermined radial juxtaposition to said first axial separating forces for axially moving a segment of said one disk by said separating forces to create a single harmonically shaped disk pack opening while maintaining said primary bending mode;
exchanging signals with a record disk abutting said opening; and
removing said axial separating forces from said one disk.

3,940,795

VERIFICATION APPARATUS USING A CARD SCANNING MEANS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 294,662, Oct. 13, 1972, Pat. No. 3,812,461, which is a continuation-in-part of Ser. No. 30,450, April 21, 1970, Pat. No. 3,696,335. This application May 20, 1974, Ser. No. 471,200
Int. Cl.² G11B *25/04, 21/02, 5/52, 5/80*
U.S. Cl. 360—101 **8 Claims**



1. A scanning reproduction apparatus for picking up signals recorded on record tracks of record members made of sheet material, such as cards or strips containing information recorded along selected portions thereof comprising:
a support,
means for prepositioning a record sheet member on said support,
a scanning mechanism including an arm,

means for pivotally supporting said arm on said support adjacent to said sheet prepositioning means,

a scanning transducer supported by said arm and operable for generating output signals of information contained on a record sheet scanned thereby,

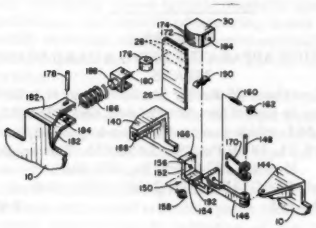
means for power driving said arm in pivotal movement on said support to cause said arm to carry said transducer across said prepositioned record sheet member to permit said transducer to scan information recorded on a selected portion of said sheet member,

means for controlling said means for power driving said arm to cause said arm to move in a first direction from a home location so as to carry said transducer in a given path across said sheet member while said transducer scans and transduces with respect to said selected portion of said sheet member and means for thereafter causing said arm to return to said home location.

3,940,796
CARD READOUT APPARATUS

Marion W. Haun, Torrance; Robert J. Mos, Huntington Beach, and Arthur W. Riley, Sylmar, all of Calif., assignors to American Magnetics Corporation, Torrance, Calif.

Filed Apr. 5, 1974, Ser. No. 458,366
Int. Cl.² G11B 5/56, 21/24; G06K 7/08
U.S. Cl. 360—109 4 Claims



1. Signal head assembly comprising:

carrier means for carrying a thin flat record member adapted to have signal data recorded thereon;

means for mounting said carrier means for movement along a given path;

a signal head having a convex face and located adjacent said path with said face in position to bear against the record member;

a mounting arm positioned substantially parallel with said path and having a cradle formed therein;

means for mounting said arm for pivoting about an axis substantially parallel to said member and transverse to said path;

means for mounting said head in said cradle for pivoting about an axis substantially parallel to said path;

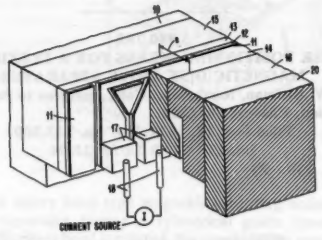
means for biasing said head against a record member held in said carrier;

abutment means opposite said head against which the member is pressed by said head.

3,940,797
SHIELDED MAGNETORESISTIVE MAGNETIC TRANSDUCER

George W. Brock, Boulder; Frank B. Shelledy, Longmont; Sidney H. Smith, Broomfield, and Richard F. M. Thornley, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 399,218, Sept. 20, 1973, Pat. No. 3,881,190. This application Feb. 10, 1975, Ser. No. 548,846
Int. Cl.² G11B 5/16, 5/22
U.S. Cl. 360—113 15 Claims



1. A magnetic head for interacting with multiwavelength information recorded as magnetized areas spaced along a recording medium, including:

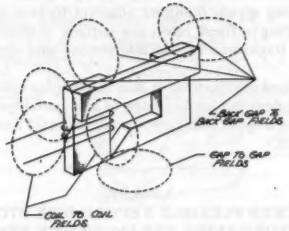
a pair of magnetically permeable members having opposing faces spaced apart a fixed distance, on the order of and less than the shortest wavelength of the recorded information, the edge of each of the two members closest to the medium lying in the same plane; and

a transducing element, including a single layer of material exhibiting the magnetoresistive effect disposed between the magnetically permeable members, closer to one of the members than the other, and having the edge closest to the medium lying in aforesaid plane.

3,940,798
CORE STRUCTURE WITH L-SHAPED BACK MEMBER AND MAGNETIC BONDING MATERIAL

Allen G. Rumpler, 5668 Encina Road, Goleta, Calif. 93017

Filed Sept. 30, 1974, Ser. No. 510,377
Int. Cl.² G11B 5/14, 5/115
U.S. Cl. 360—127 9 Claims



1. A magnetic head capable of converting electrical variations into magnetic variations, and magnetic variations into electrical variations to impinge a magnetic media, said magnetic head comprising:

a plurality of magnetic cores each comprising:

a U-type core having a non-magnetic gap adjacent said magnetic media;

a magnetic bar having a plurality of legs, forming the shape of a prism and having surfaces contiguous to said U-type core to provide a closed magnetic circuit;

a bonding means for bonding said magnetic bar to said U-type core and for magnetically coupling said magnetic bar with said U-type core, said bonding means containing a magnetic material; and a plurality of magnetic flux shields, one of said plurality disposed between each pair of magnetic cores of said plurality of magnetic cores.

3,940,799

TAPE CASSETTE WITH ERASURE PREVENTION RECESSES AT REAR CORNERS

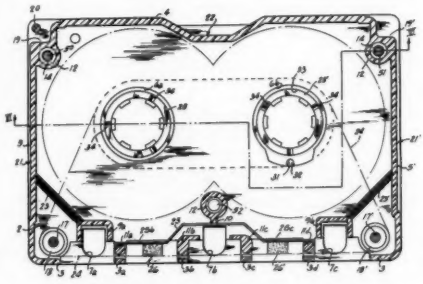
Isao Matsumoto, and Kenkichi Umeda, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 356,356, May 2, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,575

Claims priority, application Japan, May 9, 1972, 47-53832[U]

Int. Cl.² G11B *23/04*, *15/04*

U.S. Cl. 360—132 3 Claims



3. A tape cassette for use with a magnetic recording machine of the type having a transducer head, hub drive means, a machine mounted sensing means, an erasure protection means mounted on the machine and activated by said sensing means, and means to receive a cassette, comprising:

a cassette housing having top and bottom planar portions, a front wall, a back wall and a pair of sidewalls joining said top and bottom planar portions with the junction of said back and side walls defining rear corners,

a pair of hubs and means rotatably mounting said hubs in said housing;

a tape member wound on said hubs and movable therebetween in response to the rotation of said hubs;

recesses formed in said cassette housing at said rear corners and being open to said side and back walls over a ninety degree sector from either the side wall or back wall to receive and seat said machine sensing means whereby when said sensing means is seated in one of said recesses said erasure protection means is activated to prevent accidental erasure of said tape member; and

means on said cassette at the entrances to said recesses to block and prevent the seating of said sensing means in said recesses whereby erasure and recording of new material can occur.

3,940,800

MODE SELECTING DEVICE HAVING A TIME DELAY BETWEEN SELECTION AND ESTABLISHMENT OF AN OPERATING MODE FOR TAPE RECORDING AND/OR RECORDING APPARATUS

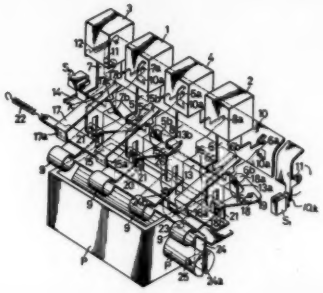
Hideo Tabuchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 24, 1974, Ser. No. 473,188

Claims priority, application Japan, June 9, 1973, 48-68405[U]

Int. Cl.² G11B *15/02*, *19/02*, *15/04*; H01H *9/20*

U.S. Cl. 360—137 14 Claims



1. A mode selecting device for a tape recording and/or reproducing apparatus: comprising a plurality of push-button means, each selective actuation from a rest position to an active position for selecting corresponding operating modes of the apparatus; a plurality of movable transmission member means respectively corresponding to said push-button means each mounted for movement from a normal rest position to an operative position; electrically energized driving means for mechanically driving, when energized, the selected one of said transmission member means to cause the movement of said selected transmission member means to its operative position responsive to the selective actuation of the corresponding push-button means to its active position; electrically controllable first switch means having ON and OFF states and being connected with said driving means for energizing the latter when said first switch means is in said ON state; circuit means for controlling said first switch means including second switch means having a normal OFF state and being changed-over to, and retained in an ON state in response to actuation of any one of said push-button members, and delaying means having an initial condition for establishing said OFF state of said first switch means and being changed to an altered condition a predetermined time after said second switch means has been changed-over to said ON state of the latter for establishing said ON state of said first switch means; and third switch means having a normal OFF state and being temporarily changed-over to an ON state for restoring said delaying means to said initial condition in response to actuation of any one of said push-button members.

DESIGN PATENTS

GRANTED FEBRUARY 24, 1976

ERRATA

For CLASS	See PATENT NO.
006–131	238,950

DESIGNS

FEBRUARY 24, 1976

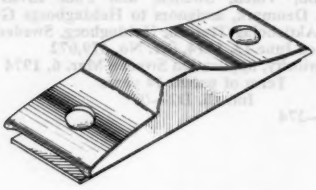
238,908
BRASSIERE
Sam Guberman, Bayonne, N.J., assignor to Maidenform, Inc., New York, N.Y.
Filed Oct. 27, 1972, Ser. No. 301,501
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24

238,909
HIP BOOT
Paul Gustav Seved Johansson, Box 18, S–310, 38 Simlangsdalen, Sweden
Filed Nov. 29, 1974, Ser. No. 528,396
Claims priority, application Sweden Oct. 28, 1974
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—272

238,910
BOOT
Helge Persson, Viken, Sweden, and Paul Elvström, Horsholm, Denmark, assignors to Helsingborgs Gummifabriks Aktiebolag Tretorn, Helsingborg, Sweden
Filed June 13, 1974, Ser. No. 479,072
Claims priority, application Sweden Mar. 6, 1974
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—274

238,911
BOOT
Helge Persson, Viken, Sweden, assignor to Helsingborgs Gummifabriks Aktiebolag Tretorn, Helsingborg, Sweden
Filed July 24, 1974, Ser. No. 491,423
Claims priority, application Sweden Mar. 6, 1974
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—274

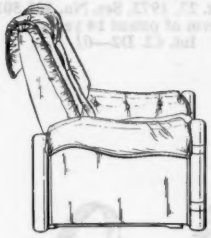
238,912
RIFLE SLING SHOULDER BRACKET
Eugene W. Stephens, 1306 Mifflin St., Huntingdon, Pa. 16652
Filed Apr. 10, 1974, Ser. No. 459,691
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400



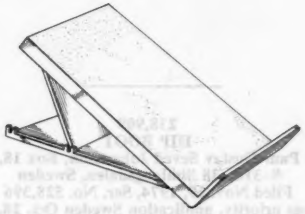
238,913
CHAIR
Rudolf Rietz, Toronto, Ontario, Canada, assignor to Chairtex Manufacturing Limited
Filed Aug. 12, 1974, Ser. No. 496,771
Claims priority, application Canada Feb. 14, 1974
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

238,914
CHAIR
Otto W. Zapf, Eschborn, West Germany, assignor to Knoll International, Inc., New York, N.Y.
Filed June 17, 1974, Ser. No. 480,296
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

238,915
SEAT
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Filed Sept. 20, 1974, Ser. No. 507,671
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—71



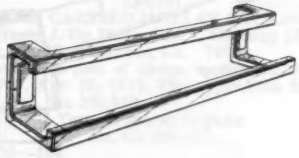
238,916
INSTRUMENT STAND
Victor Cummins, 3630 Barham Blvd., Suite 201, Los Angeles, Calif. 90068
Filed Nov. 4, 1974, Ser. No. 520,667
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85



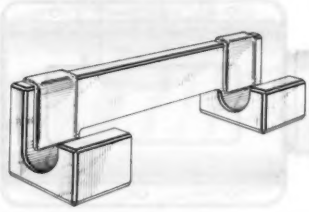
238,917
COMBINED BRUSH HOLDER AND BRUSH
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,493
Claims priority, application France May 21, 1974
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D6—86

238,918
SOAP DISPENSER AND MOUNTING BRACKET THEREFOR
William R. Breen, Toronto, Ontario, Canada, assignor to W. R. Breen Limited, Rexdale, Ontario, Canada
Filed Jan. 7, 1975, Ser. No. 539,207
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—95

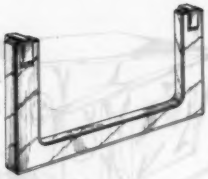
238,919
TOWEL RACK
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,486
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99



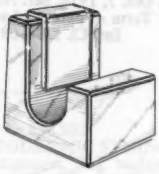
238,920
HOOK FOR TOWELS OR THE LIKE
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,485
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—102



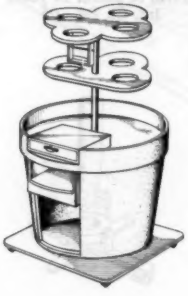
238,921
TOWEL RACK
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,494
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99



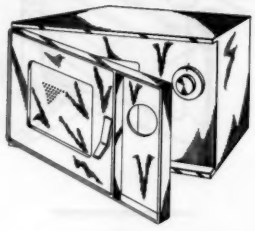
238,922
HOOK FOR TOWELS OR THE LIKE
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,491
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—102



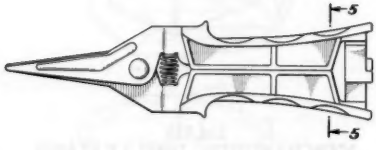
238,923
MERCHANDISING DISPLAY STAND
Billie Swan Brown, 4339 Jett Road NW. 30327, and Martha Lynn Bennett, 261 Colonial Homes Drive NW. 30309, both of Atlanta, Ga.
Filed June 26, 1974, Ser. No. 483,214
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—158



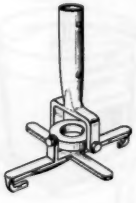
238,924
MICROWAVE OVEN
Arthur W. Vonderhaar, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio
Filed Feb. 24, 1975, Ser. No. 552,647
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



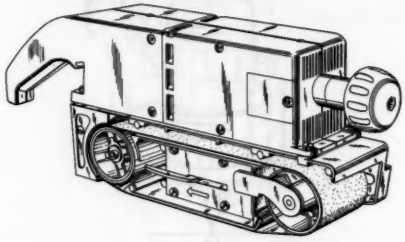
238,925
UTILITY SHEARS
Bernard R. Lavitch, 16253 Lovett Place, Encino, Calif. 91316, and Arthur Kelsen, 11701 Foster Road, Los Alamitos, Calif. 90720
Filed Oct. 7, 1974, Ser. No. 512,500
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5



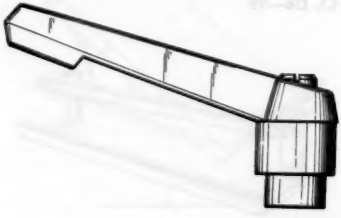
238,926
SPANNER WRENCH
Azel Thad Wall, Rte. 3, Box 37, Greensboro, N.C. 28310
Filed Jan. 21, 1975, Ser. No. 542,706
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—27



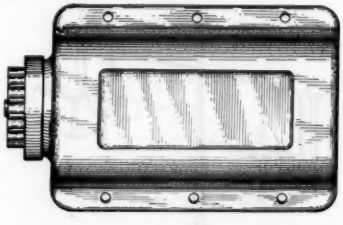
238,927
SURFACE BELT SANDER
Herbert Andre, Nuertingen-Raidwangen, and Ralph Muller, Frickenhausen, Germany, assignors to Karl M. Reich Machinenfabrik G.m.b.H., Nuertingen, Germany
Filed June 11, 1974, Ser. No. 478,285
Claims priority, application Germany Feb. 13, 1974
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62



238,928
HANDLE
Heinrich Kipp, 7247 Sulz, Germany
Filed Jan. 17, 1975, Ser. No. 541,954
Term of patent 14 years
Int. Cl. D8—*05*; D15—*99*
U.S. Cl. D8—107



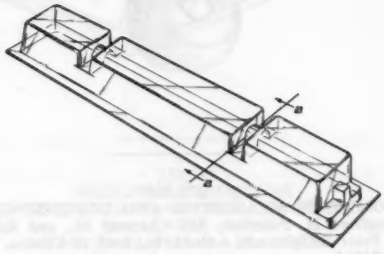
238,929
COMBINED SAFETY EQUIPMENT CONTAINER AND CLOSURE THEREFOR
Charles D. Piefer, 213 S. Washington St., Shelbyville, Ill. 62565
Filed Dec. 8, 1972, Ser. No. 313,447
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—59



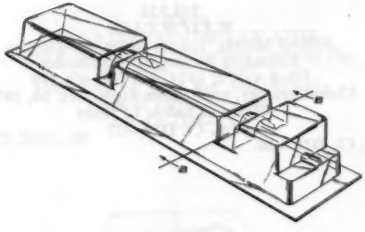
238,930
BOTTLE
Royal F. Dadmun, Jr., Baltimore, Md., and James B. Earle, Richardson, and Henry B. Jameson, Jr., Richard V. Kuska, and Daniel A. Leo, Dallas, Tex., assignors to Anderson, Clayton & Co., Houston, Tex.
Filed Oct. 10, 1974, Ser. No. 513,592
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—160

238,931
HAND CARRIED DISPLAY PACKAGE
Henry J. Du Molin, Rte. 1, Highway 23, Port Sulphur, La. 70083
Continuation-in-part of design application Ser. No. 247,907, Apr. 26, 1972. This application Sept. 13, 1973, Ser. No. 396,910
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—184

238,932
COVER FOR A HYPODERMIC SYRINGE PACKAGE
John E. Thomas, Matteson, Ill., assignor to Armour Pharmaceutical Company, Phoenix, Ariz.
Filed Jan. 21, 1974, Ser. No. 435,068
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192

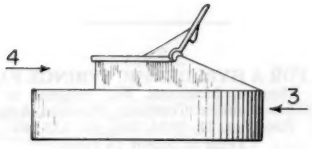


238,933
COVER FOR A HYPODERMIC SYRINGE PACKAGE
John E. Thomas, Matteson, Ill., assignor to Armour Pharmaceutical Company, Phoenix, Ariz.
Filed Jan. 21, 1974, Ser. No. 435,069
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192



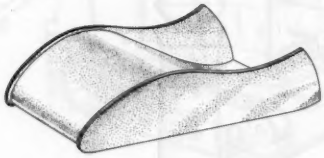
238,9[illegible]
COMBINED OVERCAP AND ACTUATOR FOR A PRESSURIZED CONTAINER
Robert E. Corba, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed May 20, 1974, Ser. No. 471,425
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258

238,935
COMBINED MEASURING AND DISPENSING CAP
Siegfried H. Fahnrich, 232 Chestnut St., and Edmund Peter Hildebrandt, 6 Cedar St., both of Clinton, Mass. 01510
Filed Oct. 2, 1974, Ser. No. 511,300
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—275

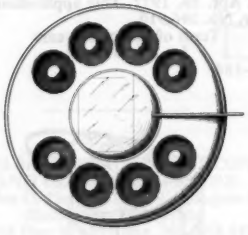


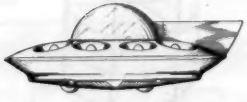
238,936
WATCH CASE
Midori Miyata, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha
Filed Apr. 1, 1974, Ser. No. 456,890
Claims priority, application Japan Oct. 30, 1973
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—30

238,937
LIFTING BODY GLIDER OR THE LIKE
Joseph J. Szakacs, 1714 Washington Place, San Diego, Calif. 92103
Filed Mar. 21, 1975, Ser. No. 560,613
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—72



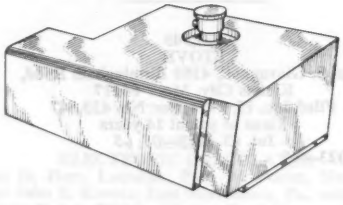
238,938
AIRCRAFT
Paul S. Moller, Dixon, Calif., assignor to Discojet Corporation, Davis, Calif.
Filed Mar. 24, 1975, Ser. No. 561,234
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—79



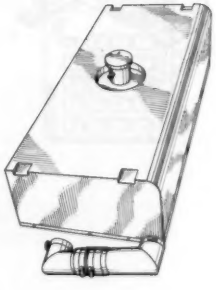


238,939
DASHBOARD HOUSING FOR A MOTORCYCLE OR THE LIKE
Joseph C. Weber, 1100 NE. 58th, Oklahoma City, Okla. 73111
Filed Dec. 5, 1974, Ser. No. 529,685
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114

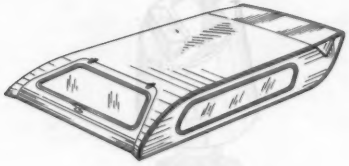
238,940
VEHICLE FUEL TANK
Michael R. Graeper, 2 Britten Court, Lake Oswego, Oreg. 97034
Filed June 27, 1974, Ser. No. 483,796
Term of patent 14 years
Int. Cl. D12—*16;* D23—*01*
U.S. Cl. D12—155



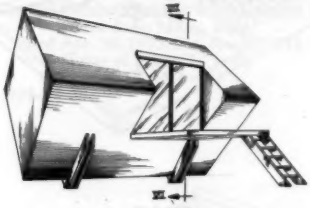
238,941
VEHICLE FUEL TANK
Michael R. Graeper, 2 Britten Court, Lake Oswego, Oreg. 97034
Filed June 27, 1974, Ser. No. 483,797
Term of patent 14 years
Int. Cl. D12—*16;* D23—*01*
U.S. Cl. D12—155



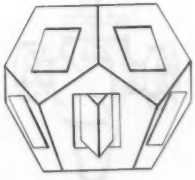
238,942
VEHICLE BODY COVER
Herbert O. Dixon, Jr., 802 N. 8th St., Clear Lake, Iowa 50428
Filed Aug. 29, 1973, Ser. No. 392,734
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



238,943
BUILDING STRUCTURE
William A. Curci, 4947 Fulton Drive NW., Canton, Ohio 44718
Filed Oct. 26, 1973, Ser. No. 410,196
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A

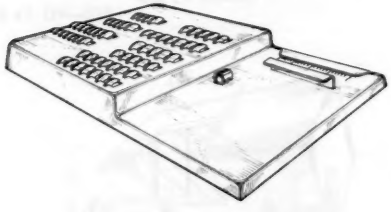


238,944
EDUCATIONAL DISPLAY AIDE
Vojko S. Milin, 375 E. Mosholu Parkway N., Bronx, N.Y. 10467
Filed Aug. 14, 1974, Ser. No. 497,548
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59

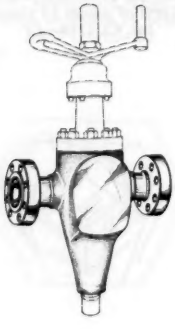


238,945
HOLDER FOR A STAPLE MACHINE AND STAPLES
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 15, 1974, Ser. No. 470,137
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75

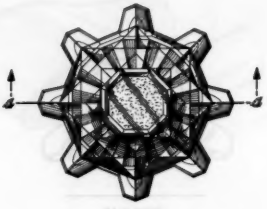
238,946
COMBINED INFORMATION RECORDER AND MEMO PAD HOLDER
Ronald Brunner, Salt Lake City, Utah, assignor to Carl Curtis, Springville, Utah
Filed Dec. 19, 1973, Ser. No. 426,128
Term of patent 7 years
Int. Cl. D19—*02*
U.S. Cl. D19—78



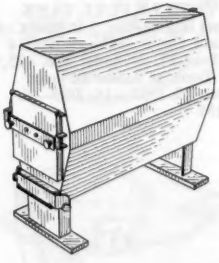
238,947
GATE VALVE BODY
Daniel R. Chilek, Rosenberg, and Floyd W. Lukens, Alvin, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Apr. 16, 1974, Ser. No. 461,476
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



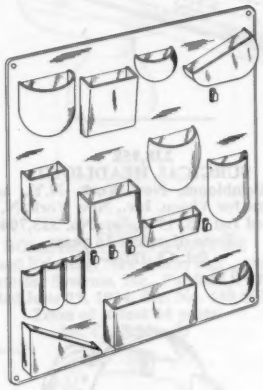
238,948
FAUCET HANDLE INSERT
Harper Landell, Fort Washington, Pa., assignor to Speakman Company
Continuation-in-part of abandoned design application Ser. No. 259,358, June 2, 1972. This application Feb. 14, 1973, Ser. No. 332,484
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—28



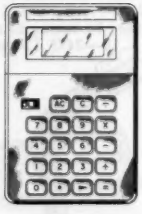
238,949
STOVE
Paul S. Giovagnoli, 4200 Birmingham Road, Kansas City, Mo. 64117
Filed Jan. 15, 1974, Ser. No. 433,547
Term of patent 14 years
Int. Cl. D23—*03, 05*
U.S. Cl. D23—97



238,950
WALL RACK FOR HOLDING HOUSEHOLD ARTICLES
Dorothee Maurer-Becker, Habsburger Platz 2, Munich, Germany
Filed June 1, 1971, Ser. No. 149,123
Claims priority, application Germany Dec. 7, 1970
Term of patent 14 years
The term of this patent subsequent to Feb. 1, 1986, has been disclaimed
Int. Cl. D6—*04*
U.S. Cl. D6—131



238,951
ELECTRONIC CALCULATOR
Lewis H. Herr, Lansdale, Paul W. Porter, Norristown, and John S. Kovacs, East Norristown, Pa., assignors to Sperry Univac Division, Sperry Rand Corporation, Blue Bell, Pa.
Filed Aug. 26, 1974, Ser. No. 500,546
Term of patent 3½ years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C

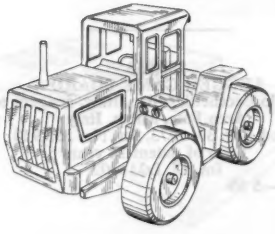


238,952
CHRISTMAS-TREE FESTOON
Malkarby Koichuevich Karkaev, ulitsa Gagarina 56b, kv. 57, and Viktor Tikhonovich Fedorov, ulitsa Kabardinskaya 178, kv. 3, both of Nalchik, U.S.S.R.
Filed Jan. 10, 1974, Ser. No. 432,328
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 B

238,953
LEGGED GAME BOARD
Claudio Cecchetti, Milan, Italy, assignor to Arco Falc, Milan, Italy
Filed Apr. 30, 1973, Ser. No. 355,912
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 SS

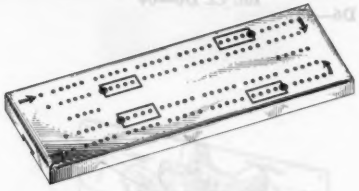
238,954
TOY VILLAGE
Ralph W. Crawford and Paul D. Snyder, East Aurora, N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 18, 1973, Ser. No. 425,706
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL

238,955
TOY TRACTOR
Vernon A. Peterson, Minneapolis, Minn., assignor to Tonka Corporation, Hopkins, Minn.
Filed Dec. 28, 1973, Ser. No. 429,355
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



238,956
TETHERED BALL TOY
Floreen I. Evitt, 726 Molino, Long Beach, Calif. 90804
Filed Sept. 9, 1974, Ser. No. 504,339
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 P

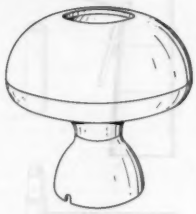
238,957
CRIBBAGE BOARD
Chester H. Johnson, Maple Lake, Minn., assignor of a fractional part interest to Merchant, Gould, Smith & Edell, Professional Association, Minneapolis, Minn.
Filed Sept. 24, 1974, Ser. No. 508,737
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 TT



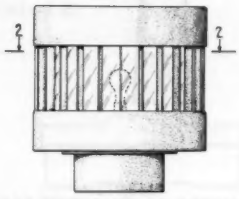
238,958
SURGICAL HEADLIGHT
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.
Filed Jan. 15, 1973, Ser. No. 323,704
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—20 H

238,959
LAMP
Masayuki Kurokawa, Tokyo, Japan, assignor to Yamagiwa Electric Co., Ltd., Tokyo, Japan
Filed June 6, 1974, Ser. No. 476,965
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 F

238,960
TABLE LAMP
Jhi Hung Leung, Kowloon, Hong Kong, assignor to Star Industrial Company Limited, San Po Kong, Kowloon, Hong Kong
Filed July 31, 1974, Ser. No. 493,624
Claims priority, application Great Britain Apr. 11, 1974
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R

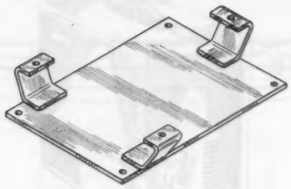


238,961
BOLLARD LIGHT FIXTURE
Marvin Paul Frieberg, New York, N.Y., assignor to Exterior Systems, Inc., Fairfield, N.J.
Filed June 19, 1974, Ser. No. 480,692
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

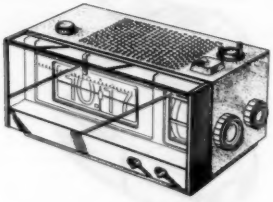


238,962
ELECTRONIC CASH REGISTER OR SIMILAR ARTICLE
Freddie C. Webb, 7180 Edgebrook Lane, Hanover Park, Ill. 60103
Filed May 2, 1974, Ser. No. 466,450
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D52—4 A

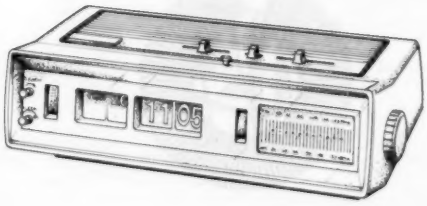
238,963
COMPRESSOR MOUNT PLATE ASSEMBLY
J. Fredrick Vinci, Forest City, Iowa, assignor to Winnebago Industries, Inc., Forest City, Iowa
Filed Feb. 24, 1975, Ser. No. 552,767
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D55—1 H



238,964
DIGITAL CLOCK RADIO
Benito Mishiro, Sakai-shi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Apr. 17, 1974, Ser. No. 461,767
Claims priority, application Japan Oct. 22, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

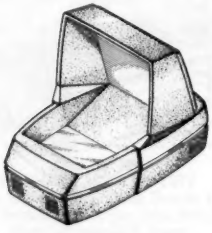


238,965
DIGITAL CLOCK RADIO
Robert F. Mansfield, Tokyo, Japan, assignor to Capehart Corporation, New York, N.Y.
Filed Sept. 18, 1974, Ser. No. 507,207
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



238,966
COPIER EVENT RECORDER
Claude H. Hutcheson, Jr., Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 19, 1973, Ser. No. 417,463
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 Q

238,967
SOUND MOTION PICTURE PROJECTION AND VIEWING DEVICE
Bradley G. Scott, Los Angeles, Calif., assignor to United Visuals Incorporated, Los Angeles, Calif.
Filed May 10, 1974, Ser. No. 468,829
Term of patent 14 years
Int. Cl. D16—*03*
U.S. CL. 61—1 N



238,968
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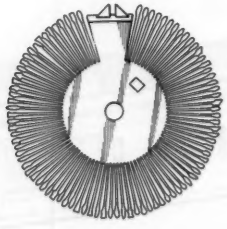
Roy J. Lahr, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 6, 1973, Ser. No. 422,391
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 R



238,969
INJECTION DEVICE
Ronald Baum, Merion Station, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.
Filed May 9, 1974, Ser. No. 468,417
Term of patent 14 years
Int. Cl. D23—*01*; D24—*02*
U.S. Cl. D83—12 A

238,970
INJECTION DEVICE
Ronald Baum, Merion Station, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.
Filed May 9, 1974, Ser. No. 468,419
Term of patent 14 years
Int. Cl. D23—*01*; D24—*02*
U.S. Cl. D83—12 A

238,971
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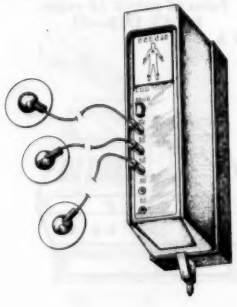
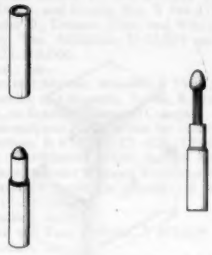
Frank R. Nardi, Englewood, Colo., and Ralph E. Pasquarette, Jordan, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 10, 1975, Ser. No. 548,285
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F

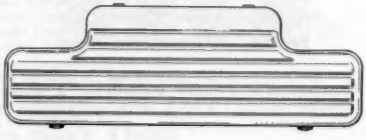


238,972
COSMETIC APPLICATOR
Jayne H. Greene, Germantown, and Ted I. Kingsford, Memphis, Tenn., assignors to Plough, Inc., Memphis, Tenn.
Filed Nov. 15, 1972, Ser. No. 304,437
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D86—10 G

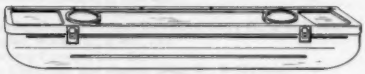


238,973
UTILITY BOX FOR VEHICLES
Arlyn E. Miller, 8 S. Beaver, Boise City, Okla. 73933
Filed Oct. 29, 1973, Ser. No. 410,705
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R

238,974
UTILITY BOX FOR VEHICLES
Arlyn E. Miller, 8 S. Beaver, Boise City, Okla. 73933
Filed Oct. 29, 1973, Ser. No. 410,706
Term of patent 14 years
Int. Cl. D03—*99*
U.S. Cl. D87—1 R



238,975
UTILITY BOX FOR VEHICLES
Arlyn E. Miller, 8 S. Beaver, Boise City, Okla. 73933
Filed Oct. 29, 1973, Ser. No. 410,707
Term of patent 14 years
Int. Cl. D03—*99*
U.S. Cl. D87—1 R



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Michael Dolas, 1164 Crestline Drive, Santa Barbara, Calif. 93105
Filed July 15, 1974, Ser. No. 488,452
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R

238,977
BANDOLIER WITH POCKET
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U.S. Cl. D87—1 R

238,978
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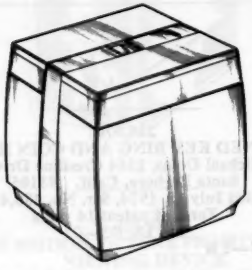
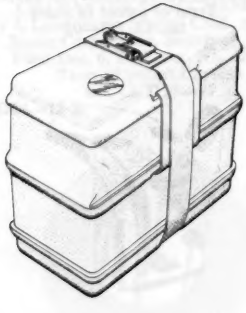
Ira E. Getchell, Jr., 195 Evergreen Parkway, Oceanside, Calif. 92054, and Thomas D. Peat, 435 N. Myrtle Ave., Monrovia, Calif. 91016
Filed Aug. 12, 1974, Ser. No. 496,377
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



238,979
CONTAINER FOR PERSONAL BREATHING APPARATUS
Eugene N. Perry, Sunnyvale, and Orval D. Feldtman, Campbell, Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Dec. 23, 1974, Ser. No. 535,516
Term of patent 14 years
Int. Cl. D3—*02*; D24—*02*
U.S. Cl. D87—1 R



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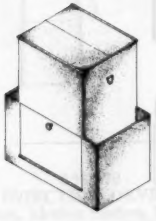
U.S. Cl. D87—5 E



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7.1	B 519,979	E	Feb. 3, 1976
7.3D	B 442,970	E	Feb. 3, 1976
7.5R	B 508,817	E	Feb. 3, 1976
58R	B 399,908	C	Jan. 13, 1976
88	B 561,764	E	Jan. 27, 1976
Class 179			
1A	B 513,756	E	Feb. 3, 1976
1CN	B 475,681	E	Jan. 20, 1976
1SM	B 476,577	E	Jan. 20, 1976
1G	B 554,594	E	Jan. 20, 1976
7.1R	B 545,050	E	Jan. 20, 1976
15AL	B 496,500	E	Feb. 3, 1976
81R	B 472,284	E	Jan. 13, 1976
170D	B 541,415	E	Feb. 3, 1976
Class 180			
5R	B 499,171	M	Jan. 27, 1976
49	B 433,094	M	Jan. 27, 1976
53R	B 551,527	M	Jan. 13, 1976
79.2R	B 533,968	M	Jan. 27, 1976
103	B 490,647	M	Feb. 24, 1976
Class 187			
.1R	B 436,724	M	Feb. 24, 1976
Class 188			
71.1	B 535,411	M	Feb. 24, 1976
73.6	B 533,056	M	Jan. 13, 1976
165	B 567,435	M	Feb. 3, 1976
218XL	B 562,698	M	Jan. 13, 1976
Class 192			
3.57	B 548,719	M	Feb. 17, 1976
4A	B 531,267	M	Feb. 24, 1976
Class 195			
29	B 418,489	C	Jan. 13, 1976
Class 196			
14.52	B 520,384	M	Jan. 27, 1976

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		CAT.	PUB. DATE
Class 197			
17	B 501,122	M	Feb. 17, 1976
18	B 535,391	M	Jan. 27, 1976
Class 198			
38	B 495,402	M	Feb. 17, 1976
129	B 569,646	M	Jan. 13, 1976
179	B 424,989	M	Feb. 3, 1976
202	B 499,352	M	Jan. 27, 1976
Class 200			
5R	B 579,104	E	Jan. 27, 1976
11TC	B 531,425	E	Feb. 3, 1976
38FA	B 494,383	E	Feb. 3, 1976
61.41	B 506,286	E	Jan. 20, 1976
67D	B 585,247	E	Feb. 3, 1976
83SA	B 428,877	E	Jan. 27, 1976
84C	B 453,533	E	Feb. 17, 1976
339	B 466,390	E	Feb. 24, 1976
Class 202			
227	B 513,280	C	Jan. 20, 1976
Class 204			
9	B 462,424	C	Feb. 24, 1976
15	B 542,135	C	Feb. 10, 1976
158HA	B 550,744	C	Feb. 17, 1976
159.18	B 498,205	C	Feb. 10, 1976
163R	B 526,447	C	Feb. 24, 1976
195S	B 843,038	C	Feb. 3, 1976
224M	B 534,314	C	Feb. 10, 1976
Class 206			
455	B 490,067	M	Jan. 27, 1976
Class 208			
15	B 437,596	C	Jan. 27, 1976
59	B 508,118	C	Feb. 17, 1976
78	B 467,250	C	Feb. 3, 1976
208R	B 508,119	C	Feb. 17, 1976
210	B 501,317	C	Jan. 13, 1976
253	B 438,916	C	Jan. 13, 1976
Class 210			
23H	B 364,797	C	Feb. 17, 1976
130	B 532,901	C	Jan. 13, 1976
Class 214			
18N	B 373,344	M	Feb. 3, 1976
58	B 555,772	M	Jan. 13, 1976
152	B 480,604	M	Jan. 13, 1976
Class 215			
216	B 541,015	M	Jan. 27, 1976
Class 219			
233	B 463,388	E	Feb. 10, 1976
273	B 403,507	E	Feb. 10, 1976
553	B 513,027	E	Feb. 17, 1976
Class 220			
23.83	B 529,156	M	Jan. 13, 1976
288	B 516,032	M	Jan. 27, 1976
337	B 578,447	M	Jan. 20, 1976
Class 222			
43	B 497,853	M	Feb. 17, 1976
67	B 521,480	M	Jan. 13, 1976
136	B 487,260	M	Jan. 27, 1976
306	B 559,954	M	Feb. 3, 1976
325	B 515,303	M	Jan. 20, 1976
Class 226			
21	B 504,778	M	Feb. 24, 1976
68	B 506,926	M	Feb. 17, 1976
Class 228			
190	B 473,972	M	Jan. 13, 1976
Class 229			
2.5	B 537,990	M	Jan. 13, 1976
17R	B 461,257	M	Jan. 13, 1976
62.5	B 429,157	M	Jan. 27, 1976
Class 235			
151.1	B 520,075	E	Feb. 24, 1976
151.34	B 492,946	E	Jan. 27, 1976
152	B 559,737	E	Jan. 20, 1976
154	B 534,016	E	Feb. 3, 1976
156	B 536,009	E	Jan. 27, 1976
181	B 520,924	E	Jan. 27, 1976
Class 236			
13	B 502,652	M	Feb. 24, 1976
15A	B 558,813	M	Feb. 3, 1976
Class 239			
424	B 580,921	M	Jan. 13, 1976
424	B 586,215	M	Jan. 20, 1976
652	B 520,534	M	Feb. 17, 1976
Class 240			
41.35R	B 454,283	E	Feb. 3, 1976
Class 242			
43R	B 521,600	M	Jan. 27, 1976
129.8	B 506,167	M	Feb. 10, 1976
Class 244			
134R	B 535,928	M	Jan. 13, 1976
169	B 423,441	M	Feb. 17, 1976
	B 511,346	M	Jan. 27, 1976
Class 248			
49	B 398,488	M	Feb. 24, 1976
73	B 494,806	M	Feb. 3, 1976
Class 249			
135	B 548,155	M	Jan. 13, 1976
Class 250			
210	B 515,908	E	Jan. 20, 1976
227	B 522,577	E	Jan. 27, 1976
	B 560,765	E	Feb. 3, 1976
291	B 500,981	E	Jan. 27, 1976
364	B 526,190	E	Feb. 17, 1976
402	B 451,534	E	Jan. 13, 1976
577	B 507,396	E	Feb. 10, 1976
Class 251			
1B	B 541,710	M	Feb. 24, 1976
58	B 425,434	M	Feb. 17, 1976
129	B 534,333	M	Feb. 17, 1976
319	B 490,589	M	Feb. 3, 1976
Class 252			
182	B 471,405	C	Feb. 10, 1976
301.1W	B 548,058	C	Feb. 17, 1976
301.4S	B 535,813	C	Jan. 27, 1976
364	B 370,309	C	Jan. 20, 1976
404	B 569,125	C	Feb. 24, 1976
408R	B 544,476	C	Feb. 24, 1976
429R	B 457,850	C	Feb. 10, 1976
432	B 509,640	C	Feb. 17, 1976
454	B 450,967	C	Jan. 13, 1976
500	B 479,242	C	Feb. 17, 1976
518	B 585,731	C	Feb. 3, 1976
543	B 403,766	C	Feb. 10, 1976
Class 254			
186R	B 511,407	M	Feb. 10, 1976
188	B 437,559	M	Feb. 3, 1976
190R	B 489,685	M	Feb. 24, 1976
Class 259			
4	B 486,614	N	Feb. 17, 1976
191	B 556,057	M	Jan. 13, 1976
Class 260			
2.5AC	B 497,194	C	Feb. 3, 1976
	B 537,102	C	Jan. 13, 1976
2.5AJ	B 557,856	C	Feb. 10, 1976
2.5AM	B 422,063	C	Feb. 3, 1976
2.5AR	B 483,606	C	Jan. 27, 1976
	B 502,589	C	Jan. 27, 1976
2.5AV	B 460,441	C	Jan. 13, 1976
2.5AW	B 483,762	C	Feb. 10, 1976
2.5R	B 471,579	C	Jan. 13, 1976
17R	B 510,998	C	Feb. 10, 1976
	B 519,487	C	Feb. 17, 1976
18TN	B 528,303	C	Feb. 10, 1976
23H	B054,859	C	Feb. 17, 1976
23XA	B 483,865	C	Jan. 13, 1976
28P	B 489,331	C	Feb. 17, 1976
28.5AS	B 501,540	C	Jan. 13, 1976
29.2EP	B 526,997	C	Jan. 13, 1976
29.2TN	B 414,266	C	Feb. 10, 1976
29.6N	B 494,440	C	Feb. 17, 1976
29.6TA	B 494,450	C	Feb. 17, 1976
30.4R	B 485,060	C	Feb. 17, 1976
32.6R	B 596,692	C	Feb. 17, 1976
33.6AQ	B 657,438	C	Jan. 20, 1976
33.6R	B 479,175	C	Feb. 17, 1976
33.8UA	B 497,780	C	Feb. 24, 1976
37EP	B 423,365	C	Feb. 17, 1976

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		CAT.	PUB. DATE
	B 441,605	C	Feb. 3, 1976
37R	B 465,955	C	Feb. 3, 1976
42.15	B 415,122	C	Feb. 10, 1976
42.18	B 519,095	C	Feb. 24, 1976
45.75W	B 561,387	C	Feb. 10, 1976
45.8N	B 506,648	C	Feb. 3, 1976
45.85R	B 236,342	C	Feb. 10, 1976
46.5UA	B 528,962	C	Feb. 24, 1976
	B 528,966	C	Feb. 24, 1976
47EP	B 440,633	C	Feb. 10, 1976
63UY	B 470,576	C	Feb. 24, 1976
75N	B 521,125	C	Feb. 10, 1976
	B 521,126	C	Feb. 10, 1976
	B 521,127	C	Feb. 17, 1976
	B 521,128	C	Feb. 10, 1976
	B 552,489	C	Feb. 10, 1976
77.5CR	B 306,668	C	Feb. 3, 1976
78.5R	B 437,209	C	Feb. 3, 1976
78S	B 451,308	C	Feb. 17, 1976
82.1	B443,563	C	Feb. 24, 1976
88.2C	B 417,014	C	Jan. 13, 1976
93.5A	B 530,174	C	Feb. 24, 1976
112.5R	B 471,617	C	Feb. 10, 1976
	B 503,817	C	Jan. 13, 1976
140R	B 503,579	C	Feb. 10, 1976
147	B 383,697	C	Feb. 17, 1976
239A	B 349,370	C	Jan. 27, 1976
239D	B 520,256	C	Jan. 13, 1976
	B 536,935	C	Jan. 13, 1976
239.1	B 538,753	C	Feb. 10, 1976
	B 547,208	C	Feb. 24, 1976
239.3A	B 506,148	C	Feb. 3, 1976
240A	B 484,067	C	Feb. 17, 1976
240G	B 482,709	C	Feb. 24, 1976
243C	B 442,810	C	Feb. 24, 1976
	B 473,039	C	Feb. 10, 1976
	B 473,040	C	Feb. 10, 1976
	B 516,047	C	Feb. 10, 1976
	B 516,296	C	Feb. 3, 1976
	B 526,096	C	Feb. 3, 1976
244R	B 348,433	C	Feb. 3, 1976
247.7T	B 468,052	C	Feb. 10, 1976
248NS	B 537,711	C	Jan. 13, 1976
250BC	B 491,883	C	Feb. 3, 1976
251A	B 480,625	C	Feb. 24, 1976
256.4Q	B 503,345	C	Feb. 24, 1976
256.5R	B 531,096	C	Feb. 10, 1976
268BF	B 490,946	C	Feb. 17, 1976
274SA	B 494,944	C	Feb. 17, 1976
285.5	B 530,318	C	Jan. 13, 1976
287C	B 492,039	C	Feb. 24, 1976
293.54	B 545,464	C	Feb. 10, 1976
293.56	B 447,000	C	Feb. 3, 1976
293.57	B 426,802	C	Feb. 17, 1976
294.8D	B 526,510	C	Jan. 20, 1976
295.5A	B 515,642	C	Feb. 24, 1976
	B 545,299	C	Feb. 24, 1976
295.5B	B 458,617	C	Feb. 3, 1976
296R	B 477,252	C	Jan. 13, 1976
306.7C	B 385,024	C	Feb. 10, 1976
307D	B 486,280	C	Feb. 3, 1976
307H	B 471,836	C	Feb. 24, 1976
	B 554,848	C	Feb. 24, 1976
308A	B 488,111	C	Jan. 13, 1976
308D	B 532,005	C	Feb. 24, 1976
309.2	B 522,567	C	Feb. 17, 1976
	B 542,158	C	Jan. 13, 1976
310R	B 535,437	C	Feb. 24, 1976
326R	B 398,084	C	Feb. 3, 1976
326.5B	B 276,026	C	Feb. 3, 1976
326.5FN	B 484,269	C	Feb. 10, 1976
326.9	B 477,481	C	Feb. 3, 1976
327C	B 480,452	C	Feb. 10, 1976
330.5	B 552,498	C	Jan. 13, 1976
	B 574,996	C	Feb. 17, 1976
340.5	B 504,877	C	Feb. 24, 1976
340.9	B 476,372	C	Feb. 24, 1976
343.2R	B 491,032	C	Feb. 10, 1976
343.3	B 536,675	C	Jan. 20, 1976
343.3R	B 495,550	C	Feb. 3, 1976
	B 495,554	C	Feb. 3, 1976
346.2M	B 440,858	C	Feb. 3, 1976
	B 302,160	C	Feb. 3, 1976
346.4	B 485,051	C	Feb. 17, 1976
348.5L	B 521,324	C	Jan. 27, 1976
348.6	B 546,295	C	Jan. 20, 1976
378	B 431,713	C	Feb. 10, 1976
429.7	B 464,587	C	Feb. 3, 1976
429.9	B 455,481	C	Feb. 24, 1976
438.1	B 518,656	C	Feb. 17, 1976
448.2H	B 390,408	C	Feb. 3, 1976
448.2N	B 551,463	C	Feb. 17, 1976
465.5R	B 747,785	C	Feb. 10, 1976
465.9	B 456,900	C	Feb. 3, 1976
	B 530,925	C	Feb. 24, 1976
471R	B 385,483	C	Feb. 17, 1976
	B 388,521	C	Jan. 13, 1976
472	B 472,256	C	Jan. 13, 1976
483	B 410,074	C	Feb. 24, 1976
493	B 351,455	C	Feb. 24, 1976
501.12	B 544,899	C	Feb. 17, 1976
513R	B 494,669	C	Feb. 3, 1976
515A	B 390,031	C	Jan. 13, 1976
516	B 386,828	C	Feb. 3, 1976
534R	B 301,143	C	Jan. 27, 1976
544C	B 471,116	C	Feb. 17, 1976
554	B 529,974	C	Feb. 17, 1976
557R	B 386,257	C	Feb. 3, 1976
561R	B 513,781	C	Feb. 24, 1976
566A	B 513,014	C	Feb. 10, 1976
568	B 529,974	C	Feb. 17, 1976
580	B 503,742	C	Feb. 17, 1976
586C	B 438,484	C	Feb. 17, 1976
593R	B 468,350	C	Jan. 13, 1976
598	B 465,202	C	Feb. 24, 1976
601R	B 208,916	C	Jan. 13, 1976
604HF	B 472,241	C	Feb. 17, 1976
609E	B 474,573	C	Jan. 20, 1976
621H	B 501,128	C	Feb. 24, 1976
621K	B 470,348	C	Jan. 13, 1976
632R	B 553,584	C	Feb. 17, 1976
637R	B 519,446	C	Feb. 24, 1976
647	B 394,248	C	Jan. 27, 1976
648F	B 330,736	C	Feb. 3, 1976
665R	B 460,846	C	Feb. 24, 1976
668D	B 430,157	C	Feb. 17, 1976
674SA	B 426,274	C	Jan. 20, 1976
683.15D	B 428,103	C	Feb. 10, 1976
683.48	B 526,027	C	Feb. 17, 1976
859R	B 519,485	C	Feb. 10, 1976
873	B 465,688	C	Jan. 27, 1976
	B 519,486	C	Feb. 17, 1976
876B	B 575,851	C	Feb. 10, 1976
876R	B 589,966	C	Feb. 17, 1976
	B 461,184	C	Feb. 17, 1976
	B 580,826	C	Feb. 17, 1976
	B 589,966	C	Feb. 17, 1976
880B	B 510,458	C	Feb. 10, 1976
884	B 456,579	C	Feb. 10, 1976
890	B 495,408	C	Feb. 3, 1976
927N	B 369,221	C	Feb. 24, 1976
929	B 502,993	C	Feb. 17, 1976
937	B 512,373	C	Feb. 10, 1976
940	B 496,430	C	Feb. 10, 1976
942	B 386,673	C	Feb. 3, 1976
948	B 534,591	C	Feb. 17, 1976
Class 261			
39A	B 562,462	C	Jan. 13, 1976
98	B 480,702	C	Jan. 27, 1976
Class 264			
36	B 308,659	C	Jan. 27, 1976
51	B 506,144	C	Feb. 10, 1976
	B 508,369	C	Jan. 13, 1976
161	B 555,437	C	Feb. 3, 1976
225	B 453,759	C	Jan. 27, 1976
Class 270			
62	B 516,609	M	Feb. 24, 1976
Class 274			
37	B 526,388	M	Feb. 3, 1976
Class 277			
27	B 544,034	M	Feb. 17, 1976
81P	B 515,216	M	Feb. 17, 1976
184	B 426,819	M	Feb. 17, 1976
Class 280			
150.5	B 583,051	M	Feb. 3, 1976
236	B 572,642	M	Feb. 10, 1976
Class 290			
17	B 477,597	E	Feb. 17, 1976
Class 292			
254	B 549,964	M	Feb. 24, 1976
Class 293			
71P	B 552,932	M	Feb. 3, 1976
Class 296			
35R	B 443,647	M	Feb. 17, 1976

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		CAT.	PUB. DATE
	B 463,671	M	Jan. 13, 1976
Class 298			
35M	B 510,588	M	Jan. 27, 1976
Class 299			
31	B 499,209	M	Feb. 24, 1976
Class 305			
27	B 506,566	M	Jan. 20, 1976
Class 307			
88.3	B 540,872	E	Jan. 20, 1976
137	B 466,444	E	Jan. 20, 1976
205	B 513,368	E	Feb. 3, 1976
232	B 540,078	E	Jan. 13, 1976
251	B 548,302	E	Feb. 17, 1976
255	B 492,688	E	Jan. 20, 1976
270	B 497,960	E	Jan. 20, 1976
293	B 519,932	E	Feb. 3, 1976
296	B 512,849	E	Feb. 3, 1976
Class 310			
4R	B 539,746	E	Feb. 17, 1976
9.6	B 501,482	E	Jan. 13, 1976
41	B 561,784	E	Jan. 27, 1976
90	B 458,500	E	Feb. 24, 1976
155	B 592,143	C	Jan. 27, 1976
168	B 526,289	E	Feb. 24, 1976
254	B 521,045	E	Feb. 24, 1976
	B 521,046	E	Feb. 24, 1976
259	B 521,044	E	Feb. 24, 1976
Class 313			
42	B 534,443	E	Jan. 27, 1976
60	B 513,706	M	Jan. 13, 1976
99	B 518,859	E	Feb. 3, 1976
273	B 531,929	E	Jan. 20, 1976
330	B 504,056	C	Feb. 24, 1976
366	B 515,455	E	Jan. 27, 1976
404	B 523,696	E	Jan. 13, 1976
452	B 160,045	E	Jan. 13, 1976
477	B 279,969	E	Jan. 13, 1976
Class 315			
169TV	B 463,322	E	Jan. 20, 1976
371	B 483,615	E	Jan. 27, 1976
388	B 516,002	E	Jan. 13, 1976
399	B 467,971	E	Jan. 13, 1976
408	B 516,564	E	Feb. 17, 1976
Class 317			
9R	B 488,634	E	Jan. 20, 1976
36TD	B 504,404	E	Feb. 24, 1976
101A	B 420,472	E	Feb. 24, 1976
120	B 527,187	E	Feb. 17, 1976
124	B 509,606	E	Feb. 3, 1976
259	B 506,461	E	Jan. 20, 1976
Class 318			
139	B 475,236	E	Feb. 3, 1976
231	B 511,886	E	Feb. 3, 1976
257	B 502,973	E	Jan. 27, 1976
Class 321			
2	B 533,734	E	Jan. 27, 1976
7	B 509,185	E	Feb. 3, 1976
61	B 495,759	E	Feb. 3, 1976
Class 323			
1	B 430,276	E	Jan. 20, 1976
17	B 459,811	E	Jan. 20, 1976
	B 583,089	E	Jan. 27, 1976
22T	B 501,181	E	Feb. 10, 1976
Class 324			
13	B 079,099	E	Jan. 13, 1976
51	B 534,767	E	Feb. 3, 1976
60C	B 540,218	E	Feb. 10, 1976
62	B 465,393	E	Jan. 27, 1976
Class 325			
40	B 558,220	E	Jan. 27, 1976
468	B 544,961	E	Jan. 13, 1976
Class 328			
129	B 078,315	E	Feb. 10, 1976
155	B 550,693	E	Jan. 20, 1976
Class 330			
15	B 530,813	E	Feb. 17, 1976
33	B 439,542	E	Jan. 27, 1976
207P	B 553,460	E	Feb. 3, 1976
Class 331			
44ST	B 527,669	E	Jan. 13, 1976
51	B 538,686	E	Jan. 13, 1976
94.5C	B 549,931	E	Jan. 20, 1976
94.5L	B 506,916	E	Feb. 3, 1976
94.5M	B 384,654	E	Feb. 24, 1976
94.5P	B 394,350	E	Jan. 13, 1976
116R	B 527,693	E	Feb. 3, 1976
117R	B 571,219	E	Feb. 24, 1976
Class 332			
9R	B 507,087	E	Feb. 17, 1976
Class 333			
30R	B 453,616	E	Jan. 27, 1976
31A	B 568,770	E	Feb. 10, 1976
72	B 534,991	E	Jan. 27, 1976
73W	B 339,194	E	Feb. 3, 1976
Class 335			
210	B 541,517	E	Jan. 13, 1976
253	B 515,452	E	Feb. 10, 1976
Class 338			
166	B 489,526	E	Feb. 3, 1976
202	B 528,761	E	Feb. 10, 1976
Class 340			
8L	B 270,274	E	Feb. 17, 1976
167B	B 568,226	E	Feb. 24, 1976
172.5	B 461,336	E	Feb. 3, 1976
	B 482,907	E	Jan. 20, 1976
	B 485,575	E	Feb. 24, 1976
173R	B 545,945	M	Jan. 27, 1976
174DC	B 443,712	E	Jan. 27, 1976
174TF	B 429,018	C	Feb. 10, 1976
	B 455,425	E	Feb. 3, 1976
	B 476,681	E	Jan. 13, 1976
	B 499,718	E	Jan. 27, 1976
198	B 546,665	E	Jan. 20, 1976
347AD	B 507,647	E	Jan. 27, 1976
	B 526,106	E	Jan. 27, 1976
347CC	B 498,500	E	Jan. 20, 1976
Class 343			
7A	B 248,240	E	Jan. 13, 1976
7.7	B 484,029	E	Feb. 10, 1976
100LE	B 488,395	E	Jan. 27, 1976
100LE	B 496,502	E	Jan. 20, 1976
786	B 547,994	E	Jan. 20, 1976
815	B 563,244	E	Jan. 27, 1976
Class 346			
75	B 512,964	E	Feb. 10, 1976
Class 350			
96WG	B 381,985	M	Feb. 3, 1976
	B 537,722	M	Feb. 3, 1976
103	B 586,663	M	Feb. 3, 1976
160LC	B 527,054	M	Feb. 17, 1976
173	B 469,947	M	Jan. 20, 1976
310	B 520,543	M	Jan. 27, 1976
320	B 548,440	M	Feb. 3, 1976
Class 354			
46	B 515,135	E	Feb. 17, 1976
70	B 533,580	E	Feb. 3, 1976
288	B 559,111	E	Feb. 24, 1976
298	B 489,328	E	Jan. 20, 1976
Class 355			
8	B 509,474	M	Feb. 17, 1976
17	B 493,501	M	Feb. 3, 1976
Class 356			
201	B 450,521	M	Feb. 17, 1976
Class 357			
16	B 496,487	E	Jan. 20, 1976
23	B 516,060	E	Feb. 17, 1976
36	B 508,961	E	Feb. 3, 1976
65	B 470,798	E	Jan. 20, 1976
72	B 481,930	E	Feb. 24, 1976
Class 358			
8	B 554,939	E	Feb. 10, 1976
41	B 502,289	E	Jan. 13, 1976
Class 360			
1	B 484,365	E	Jan. 27, 1976
15	B 283,941	E	Feb. 3, 1976
17	B 461,874	E	Jan. 27, 1976
27	B 427,883	E	Jan. 20, 1976

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		CAT.	PUB. DATE
60	B 491,111	E	Feb. 17, 1976
78	B 487,411	E	Feb. 24, 1976
80	B 403,477	E	Feb. 3, 1976
81	B 500,176	E	Feb. 3, 1976
85	B 501,253	E	Feb. 3, 1976
130	B 579,806	E	Feb. 3, 1976
Class 401			
219	B 557,621	M	Feb. 3, 1976
Class 403			
107	B 513,789	M	Feb. 3, 1976
318	B 540,632	M	Jan. 13, 1976
Class 404			
71	B 452,672	M	Jan. 13, 1976
77	B 434,206	M	Feb. 3, 1976
Class 408			
124	B 501,993	M	Jan. 13, 1976
146	B 521,986	M	Feb. 3, 1976
Class 415			
14	B 471,735	M	Feb. 3, 1976
115	B 561,712	C	Feb. 17, 1976
136	B 563,412	M	Feb. 24, 1976
213R	B 512,547	M	Jan. 13, 1976
214	B 552,006	M	Feb. 3, 1976
Class 416			
61	B 549,394	M	Jan. 27, 1976
Class 423			
238	B 485,401	C	Jan. 27, 1976
242	B 066,272	C	Feb. 24, 1976
249	B 402,553	C	Feb. 17, 1976
283	B 521,984	C	Feb. 17, 1976
315	B 471,221	C	Jan. 13, 1976
390	B 549,198	C	Jan. 13, 1976
393	B 491,455	C	Feb. 3, 1976
448	B 414,028	C	Feb. 17, 1976
580	B 379,177	C	Jan. 27, 1976
Class 424			
9	B 426,424	C	Feb. 3, 1976
115	B 482,660	C	Feb. 10, 1976
118	B 542,226	C	Feb. 24, 1976
122	B 524,179	C	Jan. 13, 1976
177	B 490,995	C	Feb. 3, 1976
203	B 576,903	C	Feb. 3, 1976
230	B 487,133	C	Jan. 27, 1976
246	B 399,098	C	Feb. 24, 1976
257	B 374,588	C	Jan. 27, 1976
258	B 426,639	C	Feb. 3, 1976
263	B 466,929	C	Jan. 27, 1976
267	B 307,698	C	Feb. 3, 1976
	B 407,737	C	Feb. 3, 1976
270	B 521,711	C	Feb. 10, 1976
273	B 566,464	C	Feb. 3, 1976
274	B 496,431	C	Jan. 13, 1976
	B 547,547	C	Feb. 24, 1976
281	B 587,786	C	Feb. 17, 1976
311	B 457,862	C	Jan. 27, 1976
317	B 510,850	C	Feb. 3, 1976
362	B 495,489	C	Feb. 3, 1976
Class 425			
222	B 163,463	M	Jan. 27, 1976
384	B 562,813	C	Feb. 3, 1976
521	B 411,765	M	Feb. 24, 1976
Class 426			
3	B 583,712	C	Feb. 10, 1976
239	B 572,726	C	Feb. 24, 1976
276	B 535,944	C	Jan. 13, 1976
535	B 560,717	C	Feb. 10, 1976
548	B 439,778	C	Feb. 3, 1976
Class 427			
39	B 476,837	C	Jan. 20, 1976
70	B 381,709	C	Jan. 13, 1976
145	B 457,547	C	Feb. 17, 1976
186	B 537,085	C	Feb. 17, 1976
207	B 501,415	C	Jan. 13, 1976
343	B 160,099	C	Jan. 13, 1976
372	B 409,848	C	Jan. 27, 1976
389	B 519,377	C	Jan. 27, 1976
Class 428			
73	B 481,737	C	Jan. 13, 1976
289	B 402,929	C	Feb. 3, 1976
315	B 373,354	C	Jan. 27, 1976
341	B 450,196	C	Feb. 10, 1976
428	B 554,655	C	Feb. 24, 1976
434	B 457,886	C	Jan. 13, 1976
515	B 474,747	C	Feb. 24, 1976
Class 431			
175	B 534,313	M	Jan. 27, 1976
264	B 398,220	M	Feb. 3, 1976

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF FEBRUARY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.C.I. Operations Pty. Limited: *See—*
Granat, Rodney John, 3,940,005.

A. O. Smith Corporation: *See—*
Buckman, John B., 3,940,646.

Aaen, Olav; and Rose, Edgar, to Outboard Marine Corporation. Variable transmission drive pulley assembly with selective drive. 3,939,720, Cl. 74-230.17E.

Aanstad, Ola J., to Westinghouse Electric Corporation. Acceleration control arrangement for turbine system, especially for HTGR power plant. 3,939,660, Cl. 60-661.000.

Ab Bygg- Och Transportekonomi (BT): *See—*
Bryntse, Anders Ivar; and Berkestad, Karl-Erik, 3,940,338.

AB Casco: *See—*
Wennerblom, Axel Bengt; and Karlsson, Alf Hugo, 3,940,352.

AB Volvo: *See—*
Stromberg, Jan Erling Gunnar, 3,939,722.

Abbott Laboratories: *See—*
Crutcher, Richard E.; and Winkler, Victor W., 3,940,491.

Abe, Haruo; Konishi, Masaichiro; and Hosokawa, Teruo, to Minolta Camera Kabushiki Kaisha. Color television camera optical system. 3,940,788, Cl. 358-43.000.

Abe, Masaru, to Bridgestone Tire Company, Ltd. Wide base type pneumatic tire for construction vehicle. 3,939,890, Cl. 152-209.00B.

Accumulatorenwerk Hoppecke: *See—*
Lahme, Norbert; and Sassmannshausen, Gunter, 3,940,348.

ACF Industries, Incorporated: *See—*
Tipton, Larry J.; Rebmann, Donald A.; and Reise, Donald A., 3,940,459.

Acton, Edward M.: *See—*
Fujiwara, Allan N.; Acton, Edward M.; and Henry, David W., 3,940,383.

Actron Industries, Inc.: *See—*
Coontz, Leland I., 3,940,740.

Adachi, Mitiaki. Container. 3,940,034, Cl. 222-478.000.

Adams, Anthony L., to Texas Instruments Incorporated. Semiconductor wafer baking and handling system. 3,940,243, Cl. 432-144.000.

Adams, Jack C., to Ecologenics Corporation. Incinerator, incineration system and method. 3,939,781, Cl. 110-8.00C.

Adams, Ronald Alfred Charles, to Ozalid Group Holdings Limited. Methods of treating aluminium. 3,940,321, Cl. 204-58.000.

Adaniya, Takeshi: *See—*
Kanbara, Shigeo; and Adaniya, Takeshi, 3,939,799.

Addington, Bruce N. Splash guard for cups. 3,940,012, Cl. 220-90.400.

Addressograph Multigraph Corporation: *See—*
Krulik, Gerald A.; and Sable, Harvey J., 3,940,270.

Adey, Anthony John; French, Geoffrey Richard; Leonard, Gordon Harris; and Williams, Malcolm, to C.A.V. Limited. Speed responsive control system for vehicle motor & transmission. 3,939,738, Cl. 74-859.000.

Advance Coatings Co.: *See—*
Whittum, Howard A.; and Hjelm, Michael J., 3,940,549.

Aebli, Horst; Fleck, Fritz; and Schmid, Horst, to Sandoz Ltd., (Sandoz AG). Triazolylstyryl triazoles. 3,940,388, Cl. 260-240.900.

Aeronca, Inc.: *See—*
Logsdon, Hillard Glenn, 3,939,868.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Commeyras, Auguste; Arnaud, Alain; Galzy, Pierre; and Jallageas, Jean-Claude, 3,940,316.

Ahlgren, Nils Harald. Lifting device for raising, lowering and suspending heavy loads. 3,940,109, Cl. 254-106.000.

Ahmed, Abul Abbas Mesbahuddin, to AMP Incorporated. Method of making a glow discharge readout device. 3,940,197, Cl. 316-17.000.

Ahrens, Barry Louis, to Deere & Company. Interlocked hand-and foot-operable engine speed control. 3,939,726, Cl. 74-513.000.

Air Products and Chemicals, Inc.: *See—*
Dixon, Dale D.; and Hayes, Larry J., 3,940,520.

Airpot Corporation: *See—*
Cohen, Arthur M., deceased; Evall, Irving; and Zalkin, Leonard, executors, 3,939,947.

Aisin Seiki Kabushiki Kaisha: *See—*
Ueda, Atsumi; and Kobashi, Uichiro, 3,939,859.

Aizawa, Takeshi: *See—*
Hori, Michimasa; and Aizawa, Takeshi, 3,940,215.

Ajisawa, Yukiyoshi: *See—*
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 3,940,422.

Akademiet for de Tekniske Videnskaber, Svejsecentralen: *See—*
Lund, Svend Aage; and Jensen, Palle Rasmus, 3,939,697.

Akhundov, Enver Bejukovich; Anischenko, Vadim Andreevich; Petrov, Vladimir Vasilievich; and Semashko, Petr Stepanovich. Method for controlling active power distribution in power transmission lines and a controller for effecting same. 3,940,687, Cl. 323-101.000.

Aktiebolaget Platmanufaktur: *See—*
Borgstrom, Klas Ingvar Helmer, 3,940,017.

Alarm Device Manufacturing Co.: *See—*
Verger, Nathan; and Schmidt, Gerhard, 3,940,725.

Albertazzi, Gastone, to Finike Italiana Marposs, Soc. In Accomandita Semplice di Mario Possati & C. Method and relevant apparatus for the indirect measurement of the longitudinal development of curved seats or grooves in mechanical workpieces. 3,939,567, Cl. 33-143.00L.

Albrecht, Erhard, to Rheinstahl Aktiengesellschaft. Fluidized furnace construction for burning partly dehydrated sludge. 3,939,782, Cl. 110-8.00F.

Aldag, Friedrich-Wilhelm; Scheipner, Robert Hans; and Schluessler, Helmut, to Demag Aktiengesellschaft. Power-driven impact tool having an impact-resistant hand grip assembly. 3,939,923, Cl. 173-162.000.

Aldridge, Raymon H.: *See—*
Woodham, Loyd L.; and Aldridge, Raymon H., 3,940,273.

Alexander, Michael Richard; Duncan, Edward; McClements, Kenneth; and Spencer, John Roger, to British Petroleum Company Limited, The. Method and apparatus for on-line non-interactive blending using an uncoupling matrix. 3,940,600, Cl. 235-151.120.

Alfa-Laval AB: *See—*
Ehnstrom, Lars Karl Johan, 3,940,492.

Alferov, Sergei Alexeevich: *See—*
Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.

Allan, Winford K., to McDonnell Douglas Corporation. Method and apparatus for cutting reinforced foam. 3,939,741, Cl. 83-52.000.

Allen, John. Control of accessories for toy or model vehicles. 3,939,605, Cl. 46-204.000.

Allenbaugh, George G., Jr., to Premier Industrial Corporation. Rotary valve with spring clutch. 3,940,107, Cl. 251-297.000.

Allied Chemical Corporation: *See—*
Marshall, Robert Moore; and Dardoufas, Kimon Constantine, 3,940,544.
North, Robert Jarl, 3,940,399.
Polk, Donald E.; and Bedell, John R., 3,939,900.
Polk, Donald E.; and Morris, Robert C., 3,940,293.
Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, 3,940,083.

Allis-Chalmers Corporation: *See—*
Keuper, John J.; Scardina, Virgil R.; and Wagner, Paul D., 3,940,647.
Rossi, Eugene F.; and Konzal, Daryl R., 3,940,239.

Allison, William D., to Ford Motor Company. Independent wheel suspension for a motor vehicle. 3,940,161, Cl. 280-96.20R.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Ling, Bernt; and Widell, Bjorn, 3,940,551.

Allred, Michael V., to Superior Industries, Inc. Electronic ignition control system. 3,940,658, Cl. 315-209.00T.

Alphameric Keyboards Limited: *See—*
Pointon, Peter, 3,940,578.

Alps Electric Co., Ltd.: *See—*
Sato, Shoji, 3,940,714.
Yoshimura, Jun'Ichi; and Watabe, Tatsumi, 3,940,702.

Alshits, Mikhail Yankelevich: *See—*
Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Altair, Incorporated: *See—*
Roth, Russell B., 3,939,821.

Altschul, Louis T. Glare eliminating device. 3,940,180, Cl. 296-97.00D.

Aluminum Company of America: *See—*
Brown, Trenton L., 3,940,088.
Hawkins, Ronald G., 3,940,553.

Alvino, William M.: *See—*
Phillips, David C.; and Alvino, William M., 3,940,322.

Alza Corporation: *See—*
Weinshenker, Ned M., 3,940,438.

Amano, Kitsutaro; Sasaki, Hiroshi; and Maruyama, Tatsuo, to Kokusai Denshin Denwa Kabushiki Kaisha. Picture signal transmission system. 3,940,555, Cl. 178-6.000.

Amano, Kozo. Practice board for contract bridge games. 3,939,577, Cl. 35-8.00B.

Amchem Products, Inc.: *See—*
Kauffman, Ralph I., 3,940,260.

American Chain & Cable Company, Inc.: *See*—
Anderson, Clifford E., 3,939,700.
Drayton, Walker E., 3,939,677.

American Cyanamid Company: *See*—
Asato, Goro; Berkelhammer, Gerald; and Gastrock, William Henry, 3,940,411.
Diehl, Robert Eugene; and Walworth, Bryant Leonidas, 3,940,419.
Lassiter, Marvin Stevens, Sr., 3,940,071.
Rauhut, Michael McKay, 3,940,604.

American Cystoscope Makers, Inc.: *See*—
Curtiss, Lawrence E., 3,939,839.

American Forest Industries Ltd.: *See*—
Sherwin, Ian M.; and Grubbe, John R., 3,940,257.

American Home Products Corporation: *See*—
Garsky, Victor M., 3,940,380.
Greenspan, George; Rees, Richard W.; and Russell, Peter B., 3,940,393.
Santilli, Arthur A.; and Kim, Dong H., 3,940,395.

American Magnetics Corporation: *See*—
Haun, Marion W.; Mos, Robert J.; and Riley, Arthur W., 3,940,796.

American Medical Electronics Corporation: *See*—
Turner, Robert Bruce, 3,940,595.

AMF Incorporated: *See*—
Johnson, Herman W., 3,939,740.

Amiad Systems Limited: *See*—
Tabor, Hanani, 3,939,755.

AMP Incorporated: *See*—
Ahmed, Abul Abbas Mesbahuddin, 3,940,197.
Hart, Granville Spencer; and Brandewie, Joseph Edward, 3,939,552.
Scheingold, William Samuel; Purdy, Harold Lawrence; and Youngfleish, Frank Christian, 3,940,786.

Ampex Corporation: *See*—
Heaslett, Alastair M., 3,940,709.
Kayan, Helmut L.; and Stahler, Alfred F., 3,940,791.

Amsted-Siemagkette GmbH: *See*—
Janzen, Wolfgang, 3,940,122.

Amtsberg, Lester A., to Chicago Pneumatic Tool Company. Rotatable drill string having a torsionally elastic shaft driving connection with rock bit. 3,939,670, Cl. 64-27.00B.

Amundson, Paul H.; and Crout, Prescott D., to United States of America, Navy. Short range passive electromagnetic detector. 3,939,770, Cl. 102-19.200.

Analog Devices, Inc.: *See*—
Brokaw, Adrian Paul, 3,940,760.

Anashkin, Alexandr Trofimovich: *See*—
Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.

Anchor Continental, Inc.: *See*—
Anderson, Ralph L., 3,940,513.

Anders, Edward O., to Global Marine, Inc. Double-acting pneumatic system for inducing motion in a floating vessel. 3,939,789, Cl. 114-40.000.

Andersen, Clifford H.: *See*—
Fox, Thomas E.; Scannell, John W.; and Andersen, Clifford H., 3,940,722.

Andersen, Stephen Verner; and Swick, Edwin Grant, to Illinois Tool Works Inc. Integral multifinger contact and method of making. 3,940,198, Cl. 339-5.00M.

Anderson, Clifford E., to American Chain & Cable Company, Inc. Material hardness tester. 3,939,700, Cl. 73-83.000.

Anderson Company, The: *See*—
Mohnach, Michael G.; and Plisky, John J., 3,940,068.
Stratton, Donald W., 3,939,525.

Anderson, Ralph L., to Anchor Continental, Inc. Method of making moisture-resistant polyurethane-based pressure-sensitive adhesives. 3,940,513, Cl. 427-207.000.

Anderson, Victor F., to Shell Oil Company. Aerosol safety cap with two piece finger entry. 3,940,025, Cl. 222-182.000.

Andrews, Harry N.: *See*—
Frisch, Erling, deceased; and Andrews, Harry N., 3,940,311.

Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, to International Business Machines Corporation. Interactive audio-visual instruction device. 3,939,579, Cl. 35-9.00A.

Angliker, Hans-Joerg: *See*—
DeFago, Raymond; Angliker, Hans-Joerg; Holzrichter, Herbert; Kneubuehler, Werner; and Peter, Richard, 3,940,246.

Anheuser-Busch, Incorporated: *See*—
Teng, James; Dai, Frank; and Stubits, Marcella C., 3,940,384.

Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich. Apparatus for conveying piles of newspapers in perpendicular directions. 3,939,961, Cl. 198-25.000.

Anischenko, Vadim Andreevich: *See*—
Akhundov, Enver Bejukovich; Anischenko, Vadim Andreevich; Petrov, Vladimir Vasilievich; and Semashko, Petr Stepanovich, 3,940,687.

Appleton Specialty Products Inc.: *See*—
Blanchfield, Phillip E., 3,940,308.

Apsit, Voldemar Voldemarovich; Ustinsky, Alexei Petrovich; Pugachev, Vladislav Alexandrovich; and Usachev, Mikhail Maiorovich. Dual duty drive with induction motor. 3,940,668, Cl. 318-226.000.

Arai, Kiyoyuki, to Copal Company Limited. Memory mechanism. 3,940,761, Cl. 340-373.000.

Arcilesi, Donald A.: *See*—
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Arenson, Simon Weil. Preventing food products from adhering. 3,940,497, Cl. 426-274.000.

Arino, Hirofumi; Cosolito, Frank J.; George, Kenneth D.; and Thornton, Alfred K., to Union Carbide Corporation. Preparation of a primary target for the production of fission products in a nuclear reactor. 3,940,318, Cl. 204-1.500.

Armco Steel Corporation: *See*—
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Goller, George N.; and Espy, Ronald H., 3,940,266.

Armi, Edgar L.: *See*—
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Armour, Donald F., to Package Machinery Company. Constant velocity manifold for injection molding machine. 3,940,224, Cl. 425-247.000.

Armstrong, Anthony Clubley, to Massey-Ferguson-Perkins Limited. Transmission control system. 3,939,933, Cl. 180-53.00R.

Arnaud, Alain: *See*—
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Arneson, Harold N.; and Heitlinger, Louis J., to General Electric Company. Physiological waveform detector. 3,939,824, Cl. 128-2.05A.

Arnold, Dan M., to Texaco Inc. Method for determining thermal neutron decay times of earth formations. 3,940,611, Cl. 250-269.000.

Arsac, Andre, to Rhone-Poulenc-Textile. Method of attaching metal compounds to polymer articles. 3,940,533, Cl. 428-225.000.

Arshansky, Mikhail Iosipovich: *See*—
Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.

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Arthur D. Little, Inc.: *See*—
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Asakai, Masaru; and Inamoto, Hiroshi, to Nissan Motor Co., Ltd. Window pane weather strip fixture. 3,939,608, Cl. 49-488.000.

Asato, Goro; Berkelhammer, Gerald; and Gastrock, William Henry, to American Cyanamid Company. 5-Amino-1-methyl-3-(1-methyl-5-nitro-2-imidazolyl)-1H-1,2,4-triazole. 3,940,411, Cl. 260-308.00R.

Asberg, Sture Lennart, to SKF Nova AB. Wheel bearing application of driven wheels for motor vehicles. 3,940,194, Cl. 308-236.000.

Asciutto, Henry E. Parachute assembly. 3,940,095, Cl. 244-148.000.

Asfour, Emil S. Apparatus for sorting tobacco leaves. 3,939,983, Cl. 209-73.000.

ASG Industries, Inc.: *See*—
Bundy, Albert J., 3,939,780.

Ash, Arthur B.; La Montagne, Maurice P.; and Markovac, Anica, to United States of America, Army. 2-Substituted phenyl-6-trifluoromethyl-4-pyridyl-carbinolamines. 3,940,404, Cl. 260-296.00R.

Ashley, Albert H., to GTE Sylvania Incorporated. Drive circuitry with error detection. 3,940,571, Cl. 179-18.0GF.

Asquith, Anthony, to Girling Limited. Mechanical actuating system. 3,939,727, Cl. 74-516.000.

Assembly Machines, Inc.: *See*—
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Astra Pharmaceutical Products Inc.: *See*—
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Autoclave Engineers, Inc.: *See*—
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Axelsson, Per Axel Torbjorn. Tooth brush. 3,939,520, Cl. 15-167.00R.

Ayers, Joseph W. Impacting process. 3,939,613, Cl. 51-320.000.

Azuma, Kuninori: *See—*
Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.

B. F. Goodrich Company, The: *See—*
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Babcock & Wilcox Company, The: *See—*
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Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Bailey, Donald L.: *See—*
Stallabrass, James R.; Ringer, T. Rayman; Bailey, Donald L.; and Hearty, Patrick F., 3,940,622.

Bailey, Paul T., to Monsanto Company. Magnetic bubble logic gates. 3,940,631, Cl. 307-88.0LC.

Bair, Willard E. Transducing system. 3,940,752, Cl. 340-189.00M.

Baker, Donald Arthur; and Billings, Peter Robert, to Rank Xerox Ltd. Method of coating electrostatographic carrier particles. 3,940,514, Cl. 427-213.000.

Baker, Jean A.: *See—*
Rogers, Gary W.; Tottie, Leroy A.; Hamilton, Vaughn G.; Goodwin, Orville O.; and Baker, Jean A., 3,939,746.

Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, to Boots Company Limited, The. Insecticidal compositions and methods of combatting insects using substituted imidazoles. 3,940,484, Cl. 424-248.000.

Baker Perkins Holdings Limited: *See—*
Steels, Gordon, 3,940,218.

Baker Research Development Service, Inc.: *See—*
Jackel, Simon S.; and Horn, Mortimer J., 3,940,504.

Ball, Geoffrey William. Mass spectrometers. 3,940,616, Cl. 250-292.000.

Ballard, Edward Cooper, to Du Pont de Nemours, E. I., and Company. Tufted carpet having a polyolefin film as the secondary backing. 3,940,525, Cl. 428-96.000.

Balon, Albert J. Tube and fitting structure. 3,940,168, Cl. 285-132.000.

Balzano, Quirino: *See—*
Fassett, Matthew; and Balzano, Quirino, 3,940,770.

Banker, Harold J., to Pram Inc. Apparatus and process for depositing electrostatically and magnetically responsive particulate matter on a conductive surface. 3,939,800, Cl. 118-636.000.

Banks, James W., to Chemetron Corporation. Mechanism to convert rotary motion to transverse motion. 3,939,718, Cl. 74-99.000.

Bar-on, Ari, to Xerox Corporation. Cleaning structure for an elastomeric fuser member. 3,940,238, Cl. 432-75.000.

Barchilon, John. Type correction aid. 3,939,963, Cl. 197-187.000.

Barenyi, Bela, to Daimler-Benz Aktiengesellschaft. Longitudinal bearer arrangement in vehicles. 3,939,934, Cl. 180-54.00R.

Barkdoll, Archie E., to Du Pont de Nemours, E. I., and Company. Soft, tough low refractive index contact lenses. 3,940,207, Cl. 351-160.000.

Barker, James N.; and Cartwright, Edward A., to Precision Thin Film Corporation. Safety system. 3,939,679, Cl. 70-277.000.

Barlow, Gordon A.: *See—*
Meyer, Burton C.; Barlow, Gordon A.; and Breslow, Jeffrey D., 3,940,140.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Lenk, Erich, 3,940,075.
Rehn, Karl-Heinz; and Middelmann, Heinz, 3,939,635.

Barnes, Paul J. Out-of-bounds wand for volleyball net and support strap. 3,940,139, Cl. 273-95.00R.

Barnes, Thomas W.; and Richmond, Albert R., to Richmond Manufacturing Company, The. Portable earth boring machine. 3,939,926, Cl. 175-24.000.

Barnett, Charles B.: *See—*
Ekama, Peter J.; Morrison, Larry A.; and Barnett, Charles B., 3,940,091.

Barnett, Clarence E.: *See—*
Barnett, Forest H.; and Barnett, Clarence E., 3,939,891.

Barnett, Forest H.; and Barnett, Clarence E. Non-skid device for vehicle wheels. 3,939,891, Cl. 152-225.00R.

Barratt, Robert O., to Foster Wheeler Energy Corporation. Helium heated bayonet tube steam generator. 3,939,804, Cl. 122-32.000.

Barry, Leonard D. Overhead transfer carrier and tracks. 3,939,775, Cl. 104-18.000.

Bartch, Donald Walter: *See—*
Deal, Samuel Broughton; and Bartch, Donald Walter, 3,940,511.

Barton, David W.: *See—*
Postma, Norman D.; and Barton, David W., 3,939,657.

BASF Aktiengesellschaft: *See—*
Gaeth, Rudolf; and Linke, Roland, 3,940,535.
Mania, Max Joachim; and Weidmann, Albrecht, 3,939,526.

Bashark, Larry Thomas, to Whirlpool Corporation. Stile and mullion heater control. 3,939,666, Cl. 62-150.000.

Bauer, Benjamin B., to CBS Inc. Compatible four channel recording and reproducing system. 3,940,559, Cl. 179-1.0GQ.

Bauer, Benjamin B., to CBS Inc. Directional microphone. 3,940,575, Cl. 179-121.00D.

Bauer, Carl F.: *See—*
Wagner, Melvin H.; Corcoran, Sandra B.; and Bauer, Carl F., 3,940,327.

Baumgartner, Jon B.; and Moran, James J., to Nalco Chemical Company. Apparatus for spray-coating product onto an article. 3,940,063, Cl. 239-70.000.

Baumle, Rudolf F., to Borg-Warner Corporation. Elastomeric seal. 3,940,155, Cl. 277-183.000.

Baxter Laboratories, Inc.: *See—*
Shine, Dennis F.; and Torau, Gunther W., 3,939,623.

Baxter, Robert Olin, to International Paper Company. Valve placement in a multi-ply, inflatable bag. 3,939,995, Cl. 214-10.50D.

Baxter, Samuel; and Changani, Pushpkumar Dewanmal, to Monsanto Chemicals Limited. Filter elements. 3,939,849, Cl. 131-269.000.

Bayer Aktiengesellschaft: *See—*
Bentz, Francis; and Nischk, Gunther, 3,940,376.
Buchel, Karl-Heinz; Kramer, Wolfgang; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,415.
Draber, Wilfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert R., 3,940,391.
Eiter, Karl, 3,940,425.
Ellegast, Konrad, 3,939,639.
Frohberger, Paul-Ernst; Urbschat, Otto Ewald, deceased; and Hermann, Gunther, 3,940,488.
Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, 3,940,350.
Hoffmann, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,940,457.
Hoppe, Peter; Drouven, Gustav; Leyer, Helmut; and Muller, Johann, 3,940,524.
Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, 3,940,413.
Kramer, Wolfgang; Buchel, Karl Heinz; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,414.
Pelousek, Herbert; Horbach, Alfred; Bottenbruch, Ludwig; and Binsack, Rudolf, 3,940,367.
Singer, Rolf Jurgen; and Jager, Gerhard, 3,940,390.

Beal, Donald F.: *See—*
Harrington, Roy V.; and Beal, Donald F., 3,940,255.

Beard, Walter C. Pump. 3,940,028, Cl. 222-321.000.

Beasely, James: *See—*
Mock, Howard C.; Isaac, Kenneth N.; Disparte, Charles P.; Hall, Warren L.; and Beasely, James, 3,940,744.

Beaufrere, Albert H. Rotary disc regenerator. 3,939,904, Cl. 165-9.000.

Beaven, Paul Anthony: *See—*
Hounsfield, Godfrey Newbold; Beaven, Paul Anthony; and Lill, Brian Herbert, 3,940,599.

Beckert, Werner F.; and Dengel, Ottmar H., to United States of America, Navy. Thermal laser pumped with high nitrogen content propellants. 3,940,298, Cl. 149-92.000.

Beckman Instruments, Inc.: *See—*
Bleak, Thomas M.; and Hansen, Paul L., 3,940,593.
Bleak, Thomas M.; and Hansen, Paul L., 3,940,594.

Becton, Dickinson and Company: *See—*
Tulis, Jerry J., 3,939,971.

Bedell, Edward L., Jr., to Corning Glass Works. Apparatus for removing core during refractory material fusion casting. 3,940,102, Cl. 249-63.000.

Bedell, John R.: *See—*
Polk, Donald E.; and Bedell, John R., 3,939,900.

Beecham Group Limited: *See—*
La Croix, Eric Arthur Stuart; and Mhasalker, Solomon Ezekiel, 3,940,487.

Beeswing, Dennis Edwin, to Elliott Brothers (London) Limited. Pulse pair recognition and relative time of arrival circuit. 3,940,764, Cl. 343-6.5LC.

Belanger, Gerard: *See—*
Blanchette, Henri; and Belanger, Gerard, 3,939,734.

Belge, Dieter, to Carl Valentin GmbH. Apparatus for imprinting selected characters on a movable record medium. 3,939,767, Cl. 101-99.000.

Bell Telephone Laboratories, Incorporated: *See—*
Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., 3,939,559.

Bellanca, Nicolo, to Dynapol. Coloring process and colored articles. 3,940,503, Cl. 426-540.000.

Ben-dov, Oded, to RCA Corporation. Circularly polarized, broadside firing tetrahelical antenna. 3,940,772, Cl. 343-853.000.

Bencini, Ferdinando: *See—*
Console, Luciano; Bencini, Ferdinando; and Chiellini, Enzo, 3,940,368.

Bendix Corporation, The: *See—*
Schulien, Howard E.; Ficken, William H.; and Sgambati, Robert J., 3,939,716.
Zipin, Richard B., 3,939,704.

Benepe, John A. Quick-removable bag closure. 3,939,533, Cl. 24-30.50R.

Bennett, William P., to Programming Technologies, Inc. Automatic tape loading apparatus for cassettes and the like. 3,940,080, Cl. 242-182.000.

Bense, William M.; and Perino, Thomas W., to Leesona Corporation. Belt traverse and guide mechanism. 3,940,078, Cl. 242-43.00R.

Benton, Louis J.: *See—*
Kross, Robert W.; Fiel, Larry D.; Crockett, Charles R.; Neely, George B.; and Benton, Louis J., 3,940,019.

Bentz, Francis; and Nischk, Gunther, to Bayer Aktiengesellschaft. Permanently antistatic shaped structures of acrylonitrile polymers. 3,940,376, Cl. 260-79.30M.

Benz Vehicle Corporation: *See—*
Benz, William G., 3,939,931.

Benz, William G., to Benz Vehicle Corporation. Electric starter drive for motor engaging vehicle drive wheel. 3,939,931, Cl. 180-13.000.

Bercher S.A. Publicite Generale: *See—*
Lecoeur, Georges; and Fontenille, Henri, 3,940,523.

Bereznicki, Bogdan, to Ford Motor Company. Threaded assembly. 3,939,889, Cl. 151-8.000.

Berger-Jenson & Nicholson, Ltd.: *See—*
Briggs, Charles Jonathan, 3,940,117.

Bergersen, Earl O. Orthodontic positioner with overbite or open bite correcting or relapse inhibiting capability. 3,939,598, Cl. 32-14.00B.

Bergonz, Francis H., to McDonnell Douglas Corporation. Vehicle locator. 3,940,630, Cl. 250-568.000.

Bergstresser, Ralph E., to Energy Innovations. Device for prolonging ignition spark. 3,939,814, Cl. 123-148.00A.

Bergstrom, Theodore R., to Minnesota Mining and Manufacturing Company. Sintered austenitic-ferritic chromium-nickel steel alloy. 3,940,269, Cl. 75-214.000.

Berkelhammer, Gerald: *See—*
Asato, Goro; Berkelhammer, Gerald; and Gastrock, William Henry, 3,940,411.

Berkestad, Karl-Erik: *See—*
Bryntse, Anders Ivar; and Berkestad, Karl-Erik, 3,940,338.

Berkowitz, Murray: *See—*
Hermes, Walter Ludwig; Berkowitz, Murray; and Lombaerde, Charles, 3,940,104.

Bernaerts, Henry J. Dual piezoelectric fluid jet transfer valve. 3,939,857, Cl. 137-83.000.

Bernett, Frank E.; and Kleinhans, Robert J., to Tile Council of America, Inc. Non hydraulic grouting composition of a water resistant polymer emulsion and a mixture of a coarse and a fine filler. 3,940,358, Cl. 260-29.60R.

Bernier, Lornie J.; and Das, Tapan K., to Textron, Inc. Method of producing a dyeable coating on metal article. 3,939,547, Cl. 29-408.000.

Bero, Robert D., to Plaskolite, Inc. Extruded plastic panel-holding strip having integral flexible hinge. 3,939,620, Cl. 52-716.000.

Berstler, Francis E. Spark plug construction. 3,940,649, Cl. 313-122.000.

Berti, Furio. Process for drying wood. 3,939,573, Cl. 34-26.000.

Bethlehem Steel Corporation: *See—*
Brachman, Armand E., 3,940,467.
Gosse, Joseph F.; and Fehr, George V., 3,939,665.

Beun, Matthijs, to U.S. Philips Corporation. Method of and device for skeletonizing characters. 3,940,737, Cl. 340-146.30H.

Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., to Gulf Research & Development Company. Two stage metal-containing oil hydrodesulfurization process employing an activated alumina supported catalyst in each stage. 3,940,330, Cl. 208-210.000.

Bied-Charreton, Philippe: *See—*
Micheron, Francois; and Bied-Charreton, Philippe, 3,940,201.

Bieganowski, Leo M. Hockey stick handle device. 3,940,134, Cl. 273-67.00A.

Big Elk Wood Corporation: *See—*
Smitherman, Stephen N.; and Dougherty, Lemuel A., 3,939,762.

Billi, Giorgio. Clutch device for knitting machines. 3,939,672, Cl. 66-155.000.

Billings, Peter Robert: *See—*
Baker, Donald Arthur; and Billings, Peter Robert, 3,940,514.

Binsack, Rudolf: *See—*
Pelousek, Herbert; Horbach, Alfred; Bottenbruch, Ludwig; and Binsack, Rudolf, 3,940,367.

Biological Developments, Inc.: *See—*
Gross, Stanley Joseph, 3,940,475.

Bittner, John R., to General Electric Company. Carriage operated ribbon drive and reverse mechanism. 3,939,957, Cl. 197-151.000.

Bivens, David J. Overhead brush system with lateral movement. 3,939,517, Cl. 15-53.00A.

Bizerba-Werke, Wilhelm Kraut KG: *See—*
Muller, Ernst; and Butz, Alois, 3,939,749.

Blachnicki, Bogdan: *See—*
Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.

Blanchette, Henri; and Belanger, Gerard. Automatic transmission with centrifugal clutches. 3,939,734, Cl. 74-752.00E.

Blanchfield, Phillip E., to Appleton Specialty Products Inc. Suction pipe with quick disconnect cover. 3,940,308, Cl. 162-363.000.

Bland, Walter P.: *See—*
McKendry, Lennon H.; and Bland, Walter P., 3,940,389.

Blanshine, Allison W., to Sperry Rand Corporation. Hay roll forming machine. 3,939,631, Cl. 56-341.000.

Blattermann, Karl-Gunther; and Nolte, Gunther, to Conrad Scholtz AG. Conveyor belt. 3,939,965, Cl. 198-198.000.

Blauschild, Robert A., to Signetics Corporation. Active breakdown circuit for increasing the operating range of circuit elements. 3,940,683, Cl. 323-4.000.

Bleak, Thomas M.; and Hansen, Paul L., to Beckman Instruments, Inc. Automatic process controller with digital memory. 3,940,593, Cl. 235-150.100.

Bleak, Thomas M.; and Hansen, Paul L., to Beckman Instruments, Inc. Automatic process controller with bumpless operation. 3,940,594, Cl. 235-150.100.

Bleiman, Claude: *See—*
Mercier, Jean; Faille, Marc Della; and Bleiman, Claude, 3,940,546.

Bleiman, Lewis W., to Pertec Corporation. Disk positioning means for a flexible magnetic disk drive apparatus. 3,940,793, Cl. 360-99.000.

Blum, Clement J., to Texas Instruments Incorporated. Separate surface, common depth point stack. 3,940,734, Cl. 340-15.5CP.

Bock, Helmuth-Joachim: *See—*
Rutkowski, Karl; Bock, Helmuth-Joachim; and Gerke, Peter, 3,940,568.

Bockett-Pugh, Charles Paul, to Honeywell Inc. Signal limiter circuits. 3,940,704, Cl. 328-169.000.

Bode, Charles H., Jr.; and Cuscino, Thomas A., to United States Steel Corporation. Method and apparatus for flame-cutting cracked corner portions from continuously cast metal workpieces. 3,940,292, Cl. 148-9.00R.

Bodnar, Jurij. Multiple exposure optical recording method and apparatus. 3,940,775, Cl. 354-122.000.

Boehringer Ingelheim GmbH: *See—*
Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, 3,940,489.

Boeing Company, The: *See—*
Dunstan, Phillip Elwyn; and Shapiro, Sam, 3,939,959.
Farris, Edsel S., 3,940,092.
Miller, John S., 3,940,120.
Pinson, George T., 3,939,706.

Boettger, Richard M.: *See—*
Nappen, Bernard H.; Boettger, Richard M.; and Marotta, Nicholas G., 3,940,505.

Boger, Allen D., Jr.: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 3,940,742.

Boguslavskaya, administratrix by Khaya Semenovna: *See—*
Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.

by Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich. Method of decomposing calcium carbonate. 3,940,324, Cl. 204-157.10H.

Bohn, Floyd O., to Dresser Industries, Inc. Combined gravel packing and perforating method and apparatus for use in well bores. 3,939,927, Cl. 175-4.520.

Boissevain, Laurens R. Pharmaceutically active compounds and their preparation and compositions. 3,940,381, Cl. 260-210.00R.

Bolex International SA: *See—*
Thevenaz, Jean, 3,939,975.

Boller, George F.: *See—*
Renk, Richard J.; and Boller, George F., 3,940,189.

Bolliger, Alfred R. Assembly for testing shock absorbers incorporated in vehicles. 3,939,692, Cl. 73-11.000.

Bolotov, Viktor Ivanovich: *See—*
Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.

Boltz, Charles D., Jr., to RCA Corporation. Timing error detecting and speed control system. 3,940,556, Cl. 178-6.60R.

Bolza, Frederick, to ICI Australia Limited. Gelled explosive composition and process. 3,940,297, Cl. 149-60.000.

Bonnett, Richard L., to Quality Products, Inc. Plastic drum. 3,940,013, Cl. 220-94.00R.

Booth, Alfred E., to Raytheon Company. Microwave waveguide dissipative load comprising fluid cooled lossy waveguide section. 3,940,719, Cl. 333-22.00F.

Booth, Eugene T., to United States of America, Energy Research and Development Administration. Apparatus for detecting leaks. 3,939,695, Cl. 73-40.700.

Booth, William M., to Brondyke, Edward E. Hose reel. 3,939,862, Cl. 137-355.160.

Boots Company Limited, The: *See—*
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,940,484.

Borel, Joseph; Toupillier, Louise Peccoud nee; and Robert, Jacques, to Commissariat a l'Energie Atomique. Liquid crystal cell. 3,939,556, Cl. 29-592.000.

Borg-Warner Corporation: *See—*
Baumle, Rudolf F., 3,940,155.
Conley, David O., 3,940,454.
Paul, Howard C.; and Tuzson, John J., 3,939,702.
Wentworth, Robert S., Jr., 3,939,872.

Borgstrom, Klas Ingvar Helmer, to Aktiebolaget Platmanufaktur. Method and apparatus for dispensing bowl-shaped objects of a thin material one at a time. 3,940,017, Cl. 221-211.000.

Boris, Michel, to Societe Technique de Pulverisation. Atomiser having a plunger tube. 3,940,070, Cl. 239-333.000.

Borodin, Daniel J.: *See—*
Tolliver, Wilbur E.; and Borodin, Daniel J., 3,939,879.

Bosshard, Alfred: *See—*
Delfosse, Pierre; and Bosshard, Alfred, 3,940,550.

Bott, John A. Spare tire extraction device. 3,940,041, Cl. 224-42.120.

Bottard, Gilles Jean Marcel: *See—*
Henry, Michel; and Bottard, Gilles Jean Marcel, 3,940,601.

Bottenbruch, Ludwig: *See—*
Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, 3,940,350.
Pelousek, Herbert; Horbach, Alfred; Bottenbruch, Ludwig; and Binsack, Rudolf, 3,940,367.

Bourns, Inc.: *See—*
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Bowler, Edward F., Jr.; Stupin, Joseph M., Jr.; and Williams, Edward G., to Xerox Corporation. Bake technique for manufacturing tetrafluoroethylene coated rolls. 3,940,518, Cl. 427-379.000.

Boyle, Donn G.: *See—*
Osborn, Robert O.; and Boyle, Donn G., 3,939,875.

Boyle and Osborn: *See—*
Osborn, Robert O.; and Boyle, Donn G., 3,939,875.

Brachman, Armand E., to Bethlehem Steel Corporation. Method of injection molding a structural foamed thermoplastic article having a uniform swirl-free and indent-free surface. 3,940,467, Cl. 264-45.500.

Bradley, Curtis E. Fuel regenerated non-polluting internal combustion engine. 3,939,806, Cl. 123-3.000.

Brandby, Kenneth, to Babcock & Wilcox Company, The. Fuel conduit. 3,939,784, Cl. 110-104.00R.

Brandewie, Joseph Edward: *See—*
Hart, Granville Spencer; and Brandewie, Joseph Edward, 3,939,552.

Brandigi, Carlo; and Fantechi, Giuliano. Device for forming a shaped cover for a flask. 3,939,759, Cl. 93-54.300.

Brandon, William D., to Caterpillar Tractor Co. Friction article of fluoroelastomers with calcium oxide bonded to metal. 3,940,527, Cl. 428-141.000.

Brandstetter, Helmut: *See—*
Hesler, Dietrich; Gresser, Gerhard; and Brandstetter, Helmut, 3,939,611.

Brandwein, Rowland; and Gupta, Mohan L., to Textron, Inc. Nickel-cadmium battery monitor. 3,940,679, Cl. 320-48.000.

Brannstrom, Kurt Osten, to Atlas Copco Aktiebolag. Method and device for damping the movement of a hammer piston. 3,939,921, Cl. 173-121.000.

Braun Aktiengesellschaft: *See—*
Roth, Johann, 3,940,208.

Braun, Vlastimil; and Vitek, Oto, to Chepos Zavody Chemicho a Potravinarskeho Strojirenstvi, Generalni Reditelstvi. Bubble tray and cap assembly for fluid contact apparatus. 3,940,462, Cl. 261-114.0VT.

Braverman, Maynard: *See—*
Fisher, William J., 3,939,725.

Bredeweg, Corwin J., to Dow Chemical Company, The. β,β-Chlorinated and brominated ethers. 3,940,449, Cl. 260-611.00B.

Brekle, Erich; Herb, Eugen; and Klingel, Hans, to Trumph Maschinene AG, Firma. Copying tracer particularly for stamping machines. 3,939,566, Cl. 33-23.00K.

Brenner, Mortimer Wilkes; and Laufer, Louis, to Schwarz Services International Ltd. Silanized antimicrobial compounds. 3,940,430, Cl. 260-448.80R.

Breslow, Jeffrey D.: *See—*
Meyer, Burton C.; Barlow, Gordon A.; and Breslow, Jeffrey D., 3,940,140.

Brewer Engineering Laboratories, Inc.: *See—*
Brewer, Given A., 3,940,730.

Brewer, Given A., to Brewer Engineering Laboratories, Inc. Strain gage construction. 3,940,730, Cl. 338-2.000.

Brian, Norton T. Coffee measure. 3,940,033, Cl. 222-452.000.

Bridgestone Tire Company, Ltd.: *See—*
Abe, Masaru, 3,939,890.
Furukawa, Junji; Haga, Kazuo; and Kobayashi, Eiichi, 3,940,378.
Tezuka, Toshiyata; Kawakami, Hiroshi; and Miura, Katsutoshi, 3,939,663.
Yukuta, Toshio; and Ohashi, Takashi, 3,940,369.

Bridgman, Henry. Medical aspiration system vacuum level indicator. 3,939,835, Cl. 128-276.000.

Briggs, Charles Jonathan, to Berger-Jenson & Nicholson, Ltd. Agitating apparatus. 3,940,117, Cl. 259-58.000.

Brill, Richard Henry: *See—*
Eaton, John Littell, Jr.; Brill, Richard Henry; and Myers, Walter E., 3,939,760.

Brinza, Joseph E.: *See—*
Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,940,628.

British Aircraft Corporation Limited: *See—*
Medhurst, Cyril William, 3,939,797.

British Gas Corporation: *See—*
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British Petroleum Company Limited, The: *See—*
Alexander, Michael Richard; Duncan, Edward; McClements, Kenneth; and Spencer, John Roger, 3,940,600.

British Steel Corporation: *See—*
Sergeant, David Robert, 3,940,294.

Brock, George W.; Shelledy, Frank B.; Smith, Sidney H.; and Thornley, Richard F. M., to International Business Machines Corporation. Shielded magnetoresistive magnetic transducer. 3,940,797, Cl. 360-113.000.

Brockelsby, Norman D., to Dutton-Lainson Company. Pawl and ratchet construction for hand winch. 3,939,729, Cl. 74-575.000.

Brockelsby, Norman D., to Dutton-Lainson Company. Anchor bracket and cleat. 3,939,793, Cl. 114-210.000.

Brockett, Bruce W.; Marzocco, Ralph L.; and Weaver, Fredrick D., to NCR Corporation. Record material and marking liquid. 3,940,275, Cl. 106-19.000.

Brodkin, Jury Markovich: *See—*
Jurovsky, Albert Yakovlevich; Zelenko, Gennady Samuilovich; and Brodkin, Jury Markovich, 3,939,712.

Brodsky, Larry: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; and Castillo, Adolfo, 3,939,548.

Brokaw, Adrian Paul, to Analog Devices, Inc. Digital-to-analog converter with current source transistors operated accurately at differentt current densities. 3,940,760, Cl. 340-347.0DA.

Brondyke, Edward E.: *See—*
Booth, William M., 3,939,862.

Brown, Neil L., to United States of America, Navy. Phase sensitive detector. 3,940,693, Cl. 324-83.00A.

Brown, Trenton L., to Aluminum Company of America. Coiled-line pay off method and apparatus. 3,940,088, Cl. 242-128.000.

Browning-Ferris Industries, Inc.: *See—*
Moberg, James W., 3,939,937.

Bruce, Albert L., to GAR Industries Ltd. Stuffing box and blow out preventing device for polish rods of oil well pumping units. 3,939,910, Cl. 166-84.000.

Bruckert, Klaus; Hoffmann, Herbert; Kutscher, Gerhard; Neubert, Rolf; and Wehling, Rolf, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method for automatically starting and stopping an open-end spinning machine. 3,939,638, Cl. 57-156.000.

Bruel, Alain. Transverse beating device for a grape-gathering machine. 3,939,629, Cl. 56-330.000.

Brunstetter, Frank H., to Hi-Torr Inventions Corporation. Erection aid for a penis. 3,939,827, Cl. 128-79.000.

Bryant Grinder Corporation: *See—*
Mitchell, William A.; and Thayer, Charles V., 3,939,944.
Schroeder, Roger L., 3,940,675.

Bryntse, Anders Ivar; and Berkestad, Karl-Erik, to Ab Bygg- Och Transportekonomi (BT). Lifting vehicle having a control member adjustable into three different positions. 3,940,338, Cl. 254-2.00R.

Buchel, Karl-Heinz; Kramer, Wolfgang; Frohberger, Paul-Ernst; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. 1-(Imidazolyl-1)-2-aryloxy-3-hydroxy-alkanes. 3,940,415, Cl. 260-309.000.

Buchel, Karl Heinz: *See—*
Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, 3,940,413.
Kramer, Wolfgang; Buchel, Karl Heinz; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,414.

Bucher-Guyer AG, Maschinenfabrik: *See—*
Hauser, Hans Ulrich; and Hartmann, Eduard, 3,940,465.

Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, to Hoechst Aktiengesellschaft. Peracylated polyamines compatible with optical brighteners as activators for inorganic peroxo compounds. 3,940,340, Cl. 252-102.000.

Buckman, John B., to A. O. Smith Corporation. Single-phase induction motor. 3,940,646, Cl. 310-166.000.

Buderus'sche Eisenwerke: *See—*
Jung, Anton Ladislaus; Lapczyna, Manfred; Mows, Peter; Schmidt-Burbach, Gerhard; and Strauss, Heinz, 3,939,765.

Buhl, Harro; Erdelitsch, Herbert; Machalitzky, Otto; and Seitter, Wolf, to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH. Plural switch construction having rotary and linear switch contact assemblies operated by independent operators. 3,940,579, Cl. 200-4.000.

Bundy, Albert J., to ASG Industries, Inc. Apparatus for shipping flat glass without packing cases. 3,939,780, Cl. 105-367.000.

Burg, Karlheinz: *See—*
Grossmann, Hans-Hermann; Burg, Karlheinz; and Sextro, Gunter, 3,940,365.

Burgess, Robert L., to Dracon Industries. Power supply for key telephone system. 3,940,572, Cl. 179-77.000.

Burke, Harry E.; and Meyer, Burton C., to Marvin Glass & Associates. Circular air glider. 3,939,602, Cl. 46-74.00D.

Burns, Joseph P., to ICI United States Inc. Fibrous mats. 3,940,537, Cl. 428-288.000.

Bush, Roberta F. Pattern fitting tool and method of custom fitting patters. 3,939,565, Cl. 33-17.00R.

Bustos, Rafael T.; and Orr, Ladd M., to Leggett & Platt, Incorporated. Solid plastic foam merchandise support. 3,939,987, Cl. 211-134.000.

Butler, John David: *See—*
Clark, William E.; and Butler, John David, 3,939,551.

Butner, Dean C.; and Clark, Douglas C. Package inspection and handling system. 3,939,984, Cl. 209-74.00M.

Buttenschon, Ove Hviding. Life-saving device. 3,939,511, Cl. 9-342.000.

Butterworth, Elbert Roy; and Duensing, Willard John, to Johns-Manville Corporation. Chill-proofing with synthetic magnesium silicates. 3,940,498, Cl. 426-423.000.

Butz, Alois: *See—*
Muller, Ernst; and Butz, Alois, 3,939,749.

Buyanov, Vitaly Evdokimovich: *See—*
Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.

Byrnes, Peter G., to Union Carbide Corporation. Ice release agents consisting of pseudo-plastic compositions of crosslinked polyacrylic acid in water-polyglycol mixture. 3,940,356, Cl. 260-29.60E.

C.A.V. Limited: *See—*
Adey, Anthony John; French, Geoffrey Richard; Leonard, Gordon Harris; and Williams, Malcolm, 3,939,738.

C. P. Clare & Company: *See—*
Fox, Thomas E.; Scannell, John W.; and Andersen, Clifford H., 3,940,722.

C. V. P. Systems Inc.: *See—*
Gidewall, Kenneth L.; and Heavner, Larry W., 3,939,624.

Cabriere, Jean, to Avions Marcel Dassault-Breguet Aviation. Flap or wing droop arrangement for an aircraft wing. 3,940,093, Cl. 244-42.00A.

Caldarella, Riccardo: *See—*
Cicognani, Enrico; Lamartina, Alfonso; and Caldarella, Riccardo, 3,940,749.

California Institute of Technology: *See—*
MacAnally, Richard B., 3,940,274.

Calspan Corporation: *See—*
Padgug, Robert Allen, 3,940,632.

Campbell, Kenneth E. Collapsible reel. 3,940,085, Cl. 242-115.000.

Campbell, Robert W.: *See—*
O'Shaughnessy, Marion T.; and Campbell, Robert W., 3,940,375.

Canadian Patents & Development Limited: *See—*
Heggie, William S., 3,939,703.
Stallabrass, James R.; Ringer, T. Rayman; Bailey, Donald L.; and Hearty, Patrick F., 3,940,622.

Canon Kabushiki Kaisha: *See—*
Komine, Yoshio, 3,940,777.
Tanikoshi, Kinji, 3,940,670.

Captocap Limited: *See—*
Hilaire, Fernand, 3,940,103.

Carder, Charles Hobert, to Union Carbide Corporation. Silane containing coating compositions. 3,940,360, Cl. 260-29.1SB.

Cardwell, Paul H.: *See—*
Kane, William S.; McCutchen, Hugh L.; and Cardwell, Paul H., 3,940,470.

Carl Valentin GmbH: *See—*
Belge, Dieter, 3,939,767.

Carlsson, Bertil Sigvard. Lifting device, particularly for lifting and transporting building boards, such as plaster and wood particle boards. 3,940,171, Cl. 294-15.000.

Carrieres et Fours A Chaux Dumont-Wautier: *See—*
Dumont, Philippe A., 3,939,693.

Carroll, John L. Combination air conditioning and fire protection system for a building. 3,939,914, Cl. 169-16.000.

Carson, Arthur N. Optical information processing system with color center crystal. 3,940,748, Cl. 340-173.0CC.

Cartwright, Edward A.: *See—*
Barker, James N.; and Cartwright, Edward A., 3,939,679.

Case, Leslie Catron. Diamino disulfide curatives for polyurethanes. 3,940,371, Cl. 260-77.5AM.

Casey, James H., to Minnesota Mining and Manufacturing Company. Device for backing butt-welds between tubes. 3,940,048, Cl. 228-50.000.

Casperson, Lee W., to United States of America, Energy Research and Development Administration. Cylindrical laser resonator. 3,940,711, Cl. 331-94.50C.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Raabe, Thomas; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,940,406.

Castagna, Eugene G.; Schrage, Albert; and Repiscak, Michael, to Dart Industries, Inc. Process for controlled degradation of propylene polymers. 3,940,379, Cl. 260-88.20S.

Castela, Andre; and Joubert, Philippe, to Institut Francaise du Petrole, des Carburants et Lubrifiants. Apparatus for applying a determined force to an element connected to an installation subjected to alternating movements. 3,940,111, Cl. 254-172.000.

Castelli, Cesar; and Vincent, Eugene, to Merlin Gerin. Mechanically operated gas blast circuit interrupter having gastight enclosures. 3,940,582, Cl. 200-148.00B.

Castillo, Adolfo: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; and Castillo, Adolfo, 3,939,548.

Caterpillar Tractor Co.: *See—*
Brandon, William D., 3,940,527.
Miers, Bruce W.; Olt, Arthur E., Jr.; Van Rossem, Richard; and Wait, John D., Jr., 3,940,177.
Penny, Robert Noel, 3,939,651.
Straw, Raymond L.; and Wilson, Larry R., 3,940,301.
Vinton, David S., 3,939,936.
Zook, Donald G.; Miller, Kenneth J.; and Patton, Eugene K., 3,939,880.

Catlin, John P., to Crucible Inc. Method for producing rotor discs. 3,940,268, Cl. 75-208.00R.

Cauldwell, Jack D.; and Gallanis, George P., to Arvin Industries, Inc. Coaxial switch for high frequency signals. 3,940,584, Cl. 200-153.00S.

Caule, Elmer J., to Olin Corporation. Method of producing tarnish resistant copper and copper alloys and products thereof. 3,940,303, Cl. 156-316.000.

Caunt, Anthony David, to Imperial Chemical Industries Limited. Olefine polymerization catalyst. 3,940,345, Cl. 252-429.00B.

CBS Inc.: *See—*
Bauer, Benjamin B., 3,940,559.
Bauer, Benjamin B., 3,940,575.

Celanese Corporation: *See—*
Serad, George A., 3,940,405.

Celotex Corporation, The: *See—*
DeLeon, Alberto, 3,940,517.

Centralne Biuro Techniczne Przemyslu Maszyn Wlokienniczych: *See—*
Laski, Jozef; and Pacholski, Jan, 3,940,074.

Centronics Data Computer Corporation: *See—*
Gershnow, Abraham H., 3,940,726.

Cerberus AG: *See—*
Muller, Peter, 3,940,753.

Cermol S.A.: *See—*
Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.

Chambers, Richard F.: *See—*
Sthare, Derwin; and Chambers, Richard F., 3,940,247.

Chambers, William John, to Du Pont de Nemours, E. I., and Company. Soil-repellent coating compositions. 3,940,359, Cl. 260-29.60F.

Champion Spark Plug Company: *See—*
Gimple, James J.; Lasley, Charles T.; and Rogers, Daniel M., 3,940,061.

Chandler Evans Inc.: *See—*
McCabe, Ralph P., 3,939,649.

Changani, Pushpkumar Dewanmal: *See—*
Baxter, Samuel; and Changani, Pushpkumar Dewanmal, 3,939,849.

Chanh, Pham Huu: *See—*
Saint-Ruf, Germain; Chanh, Pham Huu; and Hoi, Buu, 3,940,387.

Charbonney, Adrien Maurice, deceased (by Thorens, Jean-Jacques, legal representative), to ETA A.G. Ebauches-Fabrik. Calender timepiece movement comprising three indicators. 3,939,645, Cl. 58-85.500.

Chartet, Andre, to Societe Anonyme des Usines Chausson. Method for equalizing differential heat expansions produced upon operation of a heat exchanger and heat exchanger embodying said method. 3,939,908, Cl. 165-149.000.

Chauvelier, Claude: *See—*
Guichard, Jean-Claude; and Chauvelier, Claude, 3,939,694.

Cheek, Thomas M., Jr., to Dart Industries, Inc. Adjustable hassock. 3,940,181, Cl. 297-439.000.

Chemetron Corporation: *See—*
Banks, James W., 3,939,718.

Chemische Werke Huls Aktiengesellschaft: *See—*
Wulf, Horst-Dieter; List, Ferdinand; Wember, Kurt; and Wilke, Norbert, 3,940,431.

Chepos Zavody Chemicho a Potravinarskeho Strojirenstvi, Generalni Reditelstvi: *See—*
Braun, Vlastimil; and Vitek, Oto, 3,940,462.

Cherchintsev, Alexandr Nikolaevich, administrator: *See—*
Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Cherchintsev, Nikolai Alexandrovich, deceased: *See—*
Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits,

Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Cherry, Charles C.; and King, Lewis C., to United States of America, Navy. Axisymmetrical annular plug nozzle. 3,940,067, Cl. 239-265.110.

Chesebrough Pond's Inc.: *See—*
Russo, John A.; and Greenberg, Mishel, 3,940,024.

Chesney, John; and Kruczek, Chester R., to General Instrument Corporation. Circuit module with recess for receiving a coupling coil. 3,940,666, Cl. 317-101.00C.

Chevron Research Company: *See—*
Fox, Richard C.; and Jones, Thornton K., 3,940,233.
Schmidt, Robert J., 3,940,540.

Chicago Bridge & Iron Company: *See—*
Rothrock, Elmer Weyman, 3,939,791.

Chicago Dynamic Industries, Inc.: *See—*
Koci, Jerry C., 3,940,671.

Chicago Pneumatic Tool Company: *See—*
Amtsberg, Lester A., 3,939,670.

Chicago Rawhide Manufacturing Company: *See—*
Olsson, Burton K., 3,940,154.

Chiellini, Enzo: *See—*
Console, Luciano; Bencini, Ferdinando; and Chiellini, Enzo, 3,940,368.

Chimura, Kazuya; Kaneko, Takashi; Takashima, Shunichi; Kawashima, Masao; and Nakazono, Ryuichi, to Mitsubishi Rayon Co., Ltd. Unitary spun composite filament. 3,940,543, Cl. 428-373.000.

Chiotan, Nicolae: *See—*
Cioca, Gheorghe; Tigaeru, Nicolae; Ionescu, Agrippa; Chiotan, Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, 3,939,831.

Chisso Corporation: *See—*
Hirao, Seiji, 3,940,325.

Christini, Theodore P.; Flynn, William P.; Inskeep, John B.; and McCauley, Harry J., to Du Pont de Nemours, E. I., and Company. Method and apparatus for concomitant particulate deposition in electroless plating, and the product thereof. 3,940,512, Cl. 427-180.000.

Christofer, Donald E., to Stock Equipment Company. Method and apparatus for controlling a transfer car from a remote station. 3,940,577, Cl. 191-12.00R.

Christofer, Donald E.: *See—*
Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,940,628.

Chun, Sun W.: *See—*
Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,940,330.

Ciba-Geigy AG: *See—*
DeFago, Raymond; Angliker, Hans-Joerg; Holzrichter, Herbert; Kneubuehler, Werner; and Peter, Richard, 3,940,246.
Pissiotas, Georg, 3,940,412.
Soltermann, Walter, 3,939,998.

Ciba-Geigy Corporation: *See—*
Fitzi, Konrad, 3,940,486.
Haas, Georges; Jenny, Erwin F.; and Rossi, Alberto, 3,940,434.
Hiestand, Armin, 3,940,435.
Mayer, Fritz; Keller, Rudolf; and Kunz, Werner, 3,940,515.
Schlaepfer, Hans, 3,940,417.

Cicognani, Enrico; Lamartina, Alfonso; and Caldarella, Riccardo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Circulatory storage network for coded data. 3,940,749, Cl. 340-173.0RC.

Cieszko, Joseph T.; and Moon, Charles L., to White Motor Corporation. Method and apparatus for cooling and deaerating internal combustion engine coolant. 3,939,901, Cl. 165-1.000.

Cioca, Gheorghe; Tigaeru, Nicolae; Ionescu, Agrippa; Chiotan, Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, to Intreprinderea Flacara Rosie. Process for preparing medicinal dressings. 3,939,831, Cl. 128-156.000.

Cioni, Elisabetta; Cioni, Lucia; and Cioni, Rovena Anichini. Machine for automatic filling and sealing of glass vials. 3,939,626, Cl. 53-167.000.

Cioni, Lucia: *See—*
Cioni, Elisabetta; Cioni, Lucia; and Cioni, Rovena Anichini, 3,939,626.

Cioni, Rovena Anichini: *See—*
Cioni, Elisabetta; Cioni, Lucia; and Cioni, Rovena Anichini, 3,939,626.

Citizen Watch Co., Ltd.: *See—*
Nishikubo, Yasuhiko, 3,939,643.

Civita, Benny I., to Lawrence Peska Associates, Inc., a part interest. Ball retrieving apparatus. 3,940,133, Cl. 273-58.00C.

Clark, Charles F. Relatively movable bodies and methods of making them. 3,939,586, Cl. 40-70.00R.

Clark, Douglas C.: *See—*
Butner, Dean C.; and Clark, Douglas C., 3,939,984.

Clark, Edward C. Water closet water volume control. 3,939,507, Cl. 4-67.00A.

Clark, Gaylord J. Brush construction. 3,939,521, Cl. 15-179.000.

Clark, Richard S.; Lininger, Ronald L.; and Reed, David W., to United States of America, Navy. Method of fog dispersion. 3,940,059, Cl. 239-2.00R.

Clark, William E.; and Butler, John David, to Federal-Mogul Corporation. Method of making polytetrafluoroethylene sealing elements with hydrodynamic action. 3,939,551, Cl. 29-417.000.

Clarke, Frank H., Jr. Organic molecular model assembly. 3,939,581, Cl. 35-18.00A.

Clarke, George A., Jr.; and Harting, Gary L., to Exxon Research & Engineering Co. Lithium borate complex grease exhibiting salt water corrosion resistance. 3,940,339, Cl. 252-18.000.

Clarke-Gravely Corporation: *See—*
Jones, Terry H., 3,939,527.
Whitney, Robert P.; and Smith, Melvin R., 3,939,518.

Clarke, Peter G.; and Rayner, Bernard P., to Sterling Hydraulics Limited. Hydraulic control valve for remote receiver. 3,939,869, Cl. 137-595.000.

Claude, Georges Bernard. Watch-bracelet. 3,940,038, Cl. 224-4.00J.

Cleary, Thomas C.; and Schleisner, Joseph W., to Deutsch Relays, Inc. Relay contact adjusting arrangement. 3,940,724, Cl. 335-197.000.

Clegg, Maurice A.: *See—*
McMullen, Arthur G.; Ruscoe, Michael J. H.; Clegg, Maurice A.; and Prowse, Ronald L., 3,940,254.

Cluett, Peabody & Co., Inc.: *See—*
Lawrence, Jackson, 3,939,576.
Morton, Kenneth O., 3,940,125.

Cochran, Keith W.: *See—*
DeLano, Richard H.; Mathews, Warren E.; Armi, Edgar L.; and Cochran, Keith W., 3,940,767.

Coffey, Elizabeth Jane Putnam. Educational board game apparatus. 3,939,578, Cl. 35-9.00R.

Cohen, Arthur M., deceased (by Cohen, Ruth S.); Evall, Irving; and Zalkin, Leonard, executors, to Airpot Corporation. Dashpot for either push or pull damping. 3,939,947, Cl. 188-282.000.

Cohen, Ruth S.: *See—*
Cohen, Arthur M., deceased; Evall, Irving; and Zalkin, Leonard, executors, 3,939,947.

Cohen, Samuel W. Hockey game. 3,940,135, Cl. 273-85.00F.

Cole National Corporation: *See—*
Hayes, Robert R., 3,939,534.

Colgate-Palmolive Company: *See—*
D'Arcangeli, Alessandro, 3,940,220.
Grand, Paul Sheldon, 3,940,482.
Gray, Frederick William; Richter, Virgil John; and Limekiller, Andrew Henry, 3,940,341.

Collins, Terence John, to Qonaar Corporation. Check receiving and testing apparatus. 3,939,954, Cl. 194-102.000.

Columbia Machine, Inc.: *See—*
Hutton, John R., 3,940,229.

Columbia Scientific Industries Corporation: *See—*
Rhodes, John R.; Weinstein, David H.; and Pradzynski, Andrzej H., 3,940,614.

Columbus McKinnon Corporation: *See—*
Ulbing, Otmar M., 3,940,173.

COM. E. IRA, S.r.C.: *See—*
Pignatelli, Enrico, 3,939,866.

COMATEL — Comptoir Europeen de Materiel Electronique: *See—*
Reggi, Romano, 3,939,542.

Comitato Nazionale per l'Energia Nucleare: *See—*
Imperiali, Franco, 3,940,309.

Commeyras, Auguste; Arnaud, Alain; Galzy, Pierre; and Jallageas, Jean-Claude, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the production of organic acids by biological hydrolysis. 3,940,316, Cl. 195-50.000.

Commissariat a l'Energie Atomique: *See—*
Borel, Joseph; Toupillier, Louise Peccoud nee; and Robert, Jacques, 3,939,556.
Donguy, Rene, 3,940,618.
Lazzari, Jean-Pierre; and Valet, Jean-Yves, 3,940,688.

Commonwealth of Australia, The: *See—*
Kossoff, George, 3,939,696.
Kossoff, George, 3,939,707.

Communications Satellite Corporation (Comsat): *See—*
Stegens, Ronald E., 3,940,706.

Compagnie Europeenne d'Accumulateurs: *See—*
Pitsch, Johann; and Lasserre, Pierre, 3,940,536.

Compagnie Internationale pour l'Informatique: *See—*
Lazzari, Jean-Pierre; and Valet, Jean-Yves, 3,940,688.

Condamines, Roland J., to Etablissement Public, Telediffusion de France. Quadriphonic sound pick-up and reproduction devices. 3,940,560, Cl. 179-1.0GQ.

Conley, David O., to Borg-Warner Corporation. Transparent high impact graft polymers. 3,940,454, Cl. 260-880.00R.

Connell, Anthony John; and Pinto, Alwyn, to Imperial Chemical Industries Limited. Methanol production. 3,940,428, Cl. 260-449.500.

Conrad Scholtz AG: *See—*
Blattermann, Karl-Gunther; and Nolte, Gunther, 3,939,965.

Conroy, Walter J.; Prescott, Robert S.; and Proulx, George G., to Honeywell Information Systems, Inc. System for control of read/write on magnetic tape. 3,940,790, Cl. 360-39.000.

Console, Luciano; Bencini, Ferdinando; and Chiellini, Enzo, to Societa' Italiana Resine S.p.A. Acrylonitrile copolymers suitable for making flame-resisting fibers. 3,940,368, Cl. 260-63.0HA.

Consolidated Devices, Inc.: *See—*
Grabovac, Bosko, 3,939,924.

Consolidation Coal Company: *See—*
Echtler, Joseph P., 3,939,709.

Constantinescu, Mihai: *See—*
Cioca, Gheorghe; Tigaeru, Nicolae; Ionescu, Agrippa; Chiotan,

Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, 3,939,831.

Continental Oil Company: *See*—
McCain, David L., 3,940,184.
Sparlin, Derry D.; and Wahl, Harry A., 3,939,912.
Sparlin, Derry D.; Fertl, Walter H.; and Young, Gary C., 3,940,612.

Conwed Corporation: *See*—
Wiegand, Donald E., 3,939,532.

Cook, Edward H., Jr., to Hooker Chemicals & Plastics Corporation. Anode for electrolytic processes. 3,940,323, Cl. 204-95.000.

Cook, Richard L., to Kayex Corporation. Apparatus for cleaning thin, fragile wafers of a material. 3,939,514, Cl. 15-21.00C.

Coombes, William S., to Sheldahl, Inc. Punch for film products having improved slug removal facility. 3,939,743, Cl. 83-98.000.

Coontz, Leland I., to Actron Industries, Inc. Method for providing reconfigurable microelectronic circuit devices and products produced thereby. 3,940,740, Cl. 340-166.00R.

Cooper, George R.; and Newhouse, Vernon L., to Purdue Research Foundation. Ultrasonic random signal doppler flow measurement system. 3,940,731, Cl. 340-3.00D.

Cooper, John William Douglas, to Xerox Corporation. Sheet handling mechanism. 3,940,126, Cl. 271-174.000.

Coors Porcelain Company: *See*—
Coubrough, Lawrence E., 3,939,902.

Copal Company Limited: *See*—
Arai, Kiyoyuki, 3,940,761.

Copes, Joseph P., to GAF Corporation. Method for controlling aquatic weeds with N-phenylalkyl-γ-hydroxybutyramide. 3,940,258, Cl. 71-66.000.

Corbett, John M., to Dow Chemical Company, The. Compositions and process for making rigid plastic foams of modified vinyl ester resins and silicone compounds. 3,940,349, Cl. 260-2.50S.

Corbett, John Roger; and Percival, Albert, to Fisons Ltd. Benzimidazole sulphonyl chlorides. 3,940,416, Cl. 260-309.200.

Corbett, Luke W., to Exxon Research and Engineering Company. Asphalt composition utilizing asphaltene concentrate. 3,940,281, Cl. 106-278.000.

Corcoran, Sandra B.: *See*—
Wagner, Melvin H.; Corcoran, Sandra B.; and Bauer, Carl F., 3,940,327.

Corning Glass Works: *See*—
Bedell, Edward L., Jr., 3,940,102.
Guile, Donald L.; and Smith, Robert K., 3,940,279.
Pierson, Joseph E.; and Stookey, Stanley D., 3,940,277.
Wilson, Lois E., 3,940,276.

Cosolito, Frank J.: *See*—
Arino, Hirofumi; Cosolito, Frank J.; George, Kenneth D.; and Thornton, Alfred K., 3,940,318.

Coubrough, Lawrence E., to Coors Porcelain Company. Heat exchanger rim and hub with L-shaped cross-section. 3,939,902, Cl. 165-8.000.

Coulter Electronics, Inc.: *See*—
Hogg, Walter R., 3,940,691.

Cousse, Henri: *See*—
Stenger, M. Antoine; Cousse, Henri; and Mouzin, M. Gilbert, 3,940,490.

Craig, John W.: *See*—
Price, Robert; and Craig, John W., 3,940,694.

Craig, Jules M.; and Karsted, Philip, to Lawrence Peska Associates, Inc., a part interest. Photograph and negative holder. 3,940,778, Cl. 354-282.000.

Crandall, Richard Seely; and Faughnan, Brian Wilfred, to RCA Corporation. Electrochromic device having an indium electrode. 3,940,205, Cl. 350-160.00R.

Crane, Jacob: *See*—
Pryor, Michael J.; Crane, Jacob; Friedman, Sam; and Shapiro, Eugene, 3,940,290.

Crathern, Charles F. H., III; and Twitchell, Sherman W., to Crathern Engineering Co., Inc. Process and apparatus for binding. 3,939,513, Cl. 11-1.00A.

Crathern Engineering Co., Inc.: *See*—
Crathern, Charles F. H., III; and Twitchell, Sherman W., 3,939,513.

Creps, Wendell D., to General Motors Corporation. Engine with dual sensor closed loop fuel control. 3,939,654, Cl. 60-276.000.

Crockett, Charles R.: *See*—
Kross, Robert W.; Fiel, Larry D.; Crockett, Charles R.; Neely, George B.; and Benton, Louis J., 3,940,019.

Cropley, Jean B.: *See*—
Walker, Wellington E.; and Cropley, Jean B., 3,940,432.

Cross, David C.; and Howard, Dean D., to United States of America, Navy. Range and angle discriminator for leading edge radar tracking. 3,940,766, Cl. 343-7.400.

Crout, Prescott D.: *See*—
Amundson, Paul H.; and Crout, Prescott D., 3,939,770.

Crucible Inc.: *See*—
Catlin, John P., 3,940,268.

Crutcher, Richard E.; and Winkler, Victor W., to Abbott Laboratories. Bacterial source of vitamin K for animal feeds. 3,940,491, Cl. 426-2.000.

Cullen, Laurie J., to Wolff Manufacturing Company. Multi-pitch tool bar for track presses. 3,939,648, Cl. 59-11.000.

Curd, Robert F., Jr. Lighted plastic discrepancy buoy. 3,939,510, Cl. 9-8.30E.

Curtis, H. James, to Ryder Truck Rental, Inc. Valve stem lock. 3,939,894, Cl. 152-427.000.

Curtiss, Lawrence E., to American Cystoscope Makers, Inc. Resectoscope and electrode therefor. 3,939,839, Cl. 128-303.150.

Curtiss-Wright Corporation: *See*—
Hermes, Walter Ludwig; Berkowitz, Murray; and Lombaerde, Charles, 3,940,104.

Cuscino, Thomas A.: *See*—
Bode, Charles H., Jr.; and Cuscino, Thomas A., 3,940,292.

Czech, James I.; and Oakley, Roy C., Jr., to Whirlpool Corporation. Suspension mounting assembly for automatic washers. 3,939,674, Cl. 68-23.300.

D. H. Baldwin Company: *See*—
Meyer, Albert, 3,940,635.

D & H Industries, Inc.: *See*—
Heary, Ormond L.; and Smith, Raymond P., 3,939,599.

Da Costa, Alvaro: *See*—
Rivman, Samuel J.; and Da Costa, Alvaro, 3,940,307.

da Costa, Harry. Manually operable dechoking and resuscitating device. 3,939,830, Cl. 128-145.700.

Dai, Frank: *See*—
Teng, James; Dai, Frank; and Stubits, Marcella C., 3,940,384.

Daido Seiko Kabushiki Kaisha: *See*—
Mizuno, Susumu, 3,940,552.

Daimler-Benz Aktiengesellschaft: *See*—
Barenyi, Bela, 3,939,934.

Daiwa Boseki Kabushiki Kaisha: *See*—
Kato, Takashi; Yoshizawa, Toshio; and Yamada, Yasuo, 3,940,076.
Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, 3,939,634.

Damon, James J., to Ford Motor Company. Independent wheel suspension for motor vehicles. 3,940,160, Cl. 280-96.20R.

Dana Corporation: *See*—
Sink, William Howard; and Flotow, Richard Allen, 3,939,951.

Dandois, Joseph E.: *See*—
Kalogerson, Thomas A.; and Dandois, Joseph E., 3,939,948.

Danfoss A/S: *See*—
Thorsoe, Flemming, 3,940,727.

Dangel, Stephen C.: *See*—
Lawson, John B.; and Dangel, Stephen C., 3,939,671.

Danielson, Irvin R., to Thor Power Tool Company. Throttle valve construction for a percussion tool. 3,939,925, Cl. 173-170.000.

Danjushevsky, Solomon Isaakovich: *See*—
Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.

Dannelly, Clarence C.; and McIntire, John M., to Eastman Kodak Company. Process for preparing crystalline silver particles having electrically conductive surfaces and product. 3,940,261, Cl. 75-.50A.

Dant & Russell, Inc.: *See*—
Potter, Edward, 3,940,230.

D'Arcangeli, Alessandro, to Colgate-Palmolive Company. Method and equipment for the manufacture of variegated detergent bars. 3,940,220, Cl. 425-131.100.

Dardoufas, Kimon Constantine: *See*—
Marshall, Robert Moore; and Dardoufas, Kimon Constantine, 3,940,544.

Darlington, William W., to Edcliff Instruments. Aircraft altitude control system. 3,940,673, Cl. 318-584.000.

Dart Industries, Inc.: *See*—
Castagna, Eugene G.; Schrage, Albert; and Repiscak, Michael, 3,940,379.
Cheek, Thomas M., Jr., 3,940,181.

Darwin, Frank S. Textile shade marker. 3,939,766, Cl. 101-92.000.

Das, Tapan K.: *See*—
Bernier, Lornie J.; and Das, Tapan K., 3,939,547.

DASA Corporation: *See*—
Healy, James W.; and Lautzenhiser, Argyle G., 3,940,573.

Datascope Corporation: *See*—
Grayzel, Joseph, 3,939,820.

Daumann, Oskar Paul, to LICO-Sportschuhfabriken Link & Co., GmbH. Ice hockey boot. 3,939,583, Cl. 36-2.50R.

Davidson, Hugh; Johnson, Keith Trevor; Leggeter, Brian Ernest; and Moore, Anthony John, to Hickson & Welch Limited. Styryl-diphenyl derivatives. 3,940,437, Cl. 260-505.00C.

Davidson, James R., to Xerox Corporation. Method of developing an electrostatic latent image. 3,940,272, Cl. 96-1.400.

Davis, Barbara, executrix: *See*—
Davis, John Howard, deceased; Harwood, Richard C., executor; and Davis, Barbara, executrix, 3,940,464.

Davis, John Howard, deceased; Harwood, Richard C., executor; and Davis, Barbara, executrix, to Imperial Chemical Industries Limited. Production of laces and granules of fibre-reinforced thermoplastics. 3,940,464, Cl. 264-40.000.

Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, to Marion Power Shovel Company, Inc. Vehicle for traversing rough terrain. 3,940,163, Cl. 280-106.00R.

Davis, Robert D., to Spectral Dynamics Corporation of San Diego. Method and apparatus for developing balance information for rotating equipments and assemblies. 3,939,715, Cl. 73-462.000.

Davis, Ronald Percival, to Interlock Industries Limited. Window or the like stays. 3,939,529, Cl. 16-179.000.

DCA Food Industries, Inc.: *See—*
McCarthy, John P.; Moyer, John; and Fischer, Leonard, 3,940,217.

De La Rue Giori S.A.: *See—*
Giori, Gualtiero, 3,939,621.

Deal, Samuel Broughton; and Bartch, Donald Walter, to RCA Corporation. Method for preparing haze-resistant lithium-silicate glare-reducing coating. 3,940,511, Cl. 427-165.000.

Decision Data Computer Corporation: *See—*
Petusky, Neil J.; and Kadyszewski, Ronald V., 3,940,127.

Deepsea Ventures, Inc.: *See—*
Kane, William S.; McCutchen, Hugh L.; and Cardwell, Paul H., 3,940,470.

Deere & Company: *See—*
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Wetrich, Peter Donald, 3,939,733.

Deering Milliken Research Corporation: *See—*
Klein, Norman E., 3,939,675.
Ruppe, Charles R., 3,939,536.
Schmidt, Calvin P., 3,939,893.

DeFago, Raymond; Angliker, Hans-Joerg; Holzrichter, Herbert; Kneubuehler, Werner; and Peter, Richard, to Ciba-Geigy AG. Sublimation transfer and isocyanate fixation of amino- or hydroxy-containing dyestuffs and transfer sheets therefor. 3,940,246, Cl. 8-2.50A.

De George, Edward C.: *See—*
Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., 3,939,538.

DeHaan, Robert D. Housing for motorcycle drive chain. 3,939,730, Cl. 74-611.000.

Deike, Robert F., to Foresight Industries. Vise and punch tool. 3,939,563, Cl. 30-361.000.

DeJaeger, Kyle L.: *See—*
Verlinden, Jerry M.; Swinford, Gary D.; DeJaeger, Kyle L.; and Kennedy, Michael W., 3,940,116.

De Lacy, Thomas J., to General Dynamics Corporation. Method and apparatus for measuring porosity using a surface-temperature porosimeter. 3,939,698, Cl. 73-73.000.

DeLano, Richard H.; Mathews, Warren E.; Armi, Edgar L.; and Cochran, Keith W., to Hughes Aircraft Company. Electronic radome-error compensation system. 3,940,767, Cl. 343-16.00R.

DeLeon, Alberto, to Celotex Corporation, The. Polyisocyanurate foam, catalyst composition and process for producing such. 3,940,517, Cl. 427-373.000.

Delfosse, Pierre; and Bosshard, Alfred, to Pluss-Staufer AG. Ultrafine natural calcium carbonates as coating pigments in coated papers. 3,940,550, Cl. 428-511.000.

Deltrol Corporation: *See—*
Guigliano, Anthony V., 3,939,870.

Demag Aktiengeselischaft: *See—*
Aldag, Friedrich-Wilhelm; Scheipner, Robert Hans; and Schluessler, Helmut, 3,939,923.

Demarest, Donald J.; and Heytmeijer, Herman R., to Westinghouse Electric Corporation. Method of preparing halophosphate phosphor of controlled particle size. 3,940,343, Cl. 252-301.40P.

Demarest, Henry M., Jr., to PPG Industries, Inc. Stain decorated glass-ceramic article. 3,940,531, Cl. 428-207.000.

Demuth, Hans, to Sulzer Brothers Limited. Weaving machine having a border forming means. 3,939,877, Cl. 139-54.000.

Dengel, Ottmar H.: *See—*
Beckert, Werner F.; and Dengel, Ottmar H., 3,940,298.

Dennis, Charles L.; Givens, Wyatt W.; and Hickman, John B., to Mobil Oil Corporation. Natural gamma radiation borehole logging system. 3,940,610, Cl. 250-253.000.

Dennison, Saul: *See—*
Seltzer, Samuel M.; and Dennison, Saul, 3,940,183.

De Pue, James M., Jr.: *See—*
Ward, Curtis E.; St. Clair, Maurice W.; De Pue, James M., Jr.; and Miller, Albert J., 3,940,656.

deRidder, Jon A., to Diamond Shamrock Corporation. Concentrate for liquid coating composition for metal substrates. 3,940,280, Cl. 106-193.00M.

de Rooij, Abraham H., to Stamicarbon B.V. Recycle process for the preparation and processing of a hydroxylammonium salt solution. 3,940,442, Cl. 260-566.00A.

Desalination Systems, Inc.: *See—*
Macevicz, Clement C.; and Million, Charles W., 3,940,336.

Desarzens, Pierre, to Omega, Louis Brandt & Frere S.A. Method and apparatus for distinguishing aperiodic noise input signals from periodic input signals during measurement. 3,939,689, Cl. 73-6.000.

Deuterium Corporation: *See—*
Spevack, Jerome S., 3,940,473.

Deutsch Relays, Inc.: *See—*
Cleary, Thomas C.; and Schleisner, Joseph W., 3,940,724.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Reinhardt, Helmut; Trebinger, Karl; and Kallrath, Gottfried, 3,940,252.

Dexter, John B., to United States of America, Navy. Omni-directional weapon arming wire connection. 3,939,754, Cl. 89-1.50D.

Diamond Shamrock Corporation: *See—*
deRidder, Jon A., 3,940,280.

Diazit Company, Inc.: *See—*
Neeb, Robert P.; Patrick, Henry W.; and Mumford, Ray H., 3,940,782.

Dichter, Michael: *See—*
Horowitz, Carl; Pinczuk, Leon; and Dichter, Michael, 3,940,377.

Dickie, Harold G. Golfer's aid. 3,940,144, Cl. 273-183.00B.

Dickson, Fred D., to Rockwell International Corporation. Burner block assembly. 3,939,871, Cl. 137-625.470.

Diebold Incorporated: *See—*
Ekama, Peter J.; Morrison, Larry A.; and Barnett, Charles B., 3,940,091.

Diehl, Robert Eugene; and Walworth, Bryant Leonidas, to American Cyanamid Company. Phthalimide derivatives and their use as plant growth regulants. 3,940,419, Cl. 260-326.00A.

Diessel GmbH & Co.: *See—*
Rothert, Klaus-Dieter; Stilkenbaumer, Herbert; Fischer, Gudrun; Madler, Armin; and Ross, Ulrich, 3,939,710.

Digital Communications Corporation: *See—*
Gabbard, Ova Gene; Kaul, Pradeep; and Hangen, Joaquin, 3,940,558.

Digital Equipment Corporation: *See—*
Fitzgerald, Brian P., 3,940,743.

Diguet, Daniel, to U.S. Philips Corporation. Semiconductor device. 3,940,784, Cl. 357-20.000.

DiMatteo, Paul L., to Dynell Electronics Corporation. Navigational error correcting system. 3,940,597, Cl. 235-150.200.

DiSalvo, Anthony L., to United States of America, Army. Method of making polyureas. 3,940,370, Cl. 260-77.5CH.

Disparte, Charles P.: *See—*
Mock, Howard C.; Issac, Kenneth N.; Disparte, Charles P.; Hall, Warren L.; and Beasely, James, 3,940,744.

Dits, Herbert: *See—*
Harcuba, Siegfried; and Dits, Herbert, 3,939,747.

Dixon, Dale D.; and Hayes, Larry J., to Air Products and Chemicals, Inc. Sulfo-fluorination of synthetic resins. 3,940,520, Cl. 427-444.000.

Dobson Park Industries Limited: *See—*
Phillips, Reginald Andrew, 3,940,151.

Dohring, Albert A.; and Dohring, Grace H. Acupuncture needle guide and restraint. 3,939,841, Cl. 128-303.190.

Dohring, Grace H.: *See—*
Dohring, Albert A.; and Dohring, Grace H., 3,939,841.

Doi, Minoru: *See—*
Komatsu, Noboru; Obayashi, Mikio; Doi, Minoru; Ota, Nobuyoshi; and Iwai, Yoshio, 3,940,728.

Domtar Limited: *See—*
Rowley, Cecil Alan, 3,940,055.

Donguy, Rene, to Commissariat a l'Energie Atomique. Sampling device for the analysis of a fluid. 3,940,618, Cl. 250-304.000.

Donnelly, James F., to Jamesbury Corporation. Valve lock. 3,939,864, Cl. 137-385.000.

Donohue, James M., to Xerox Corporation. Programmable controller for controlling reproduction machines. 3,940,210, Cl. 355-14.000.

Donohue, Paul Christopher, to Du Pont de Nemours, E. I., and Company. Quaternary sulfides and selenides containing Ba or Sr and selected transition metals. 3,940,472, Cl. 423-511.000.

Dooley, Milton T., to Reynolds Metals Company. Plasma jet electrode for magnetohydrodynamic generators. 3,940,641, Cl. 310-11.000.

Door, Helmut, to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH. Switch construction, particularly for indicating automobile seat loading. 3,940,581, Cl. 200-85.00A.

Doschko, Werner; and Pscheidl, Hans, to Imperial Chemical Industries Limited. Process for the production of effect yarns. 3,939,632, Cl. 57-34.0HS.

Dougherty, Lemuel A.: *See—*
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Dow Chemical Company, The: *See—*
Bredeweg, Corwin J., 3,940,449.
Corbett, John M., 3,940,349.
Hoy, Edgar F., 3,940,448.
Johnston, Howard, 3,940,392.
McKendry, Lennon H.; and Bland, Walter P., 3,940,389.

Draber, Wilfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengeselischaft. 3,4-Dihydro-1,2,4-triazine compounds. 3,940,391, Cl. 260-248.0AS.

Dracon Industries: *See—*
Burgess, Robert L., 3,940,572.

Drayton, Walker E., to American Chain & Cable Company, Inc. Theft deterrent chain locking device. 3,939,677, Cl. 70-14.000.

Dresser Industries, Inc.: *See—*
Bohn, Floyd O., 3,939,927.
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Drouven, Gustav: *See—*
Hoppe, Peter; Drouven, Gustav; Leyer, Helmut; and Muller, Johann, 3,940,524.

Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna. Device for monitoring and controlling the relative flows and losses of grain in a grain combine thresher. 3,939,846, Cl. 130-27.00R.

DSO "Bulgarski Darjavni Jeleznitzi": *See—*
Stanev, Tzvyatko Penchev; and Lambiev, Adrian Kostov, 3,939,691.
Dubois, Robert A.; and Gushard, William H., to Greif Bros. Corporation. All plastic drum. 3,940,011, Cl. 220-66.000.
Dubson, Paul T.: *See—*
Miller, Marshall W.; Vanden Broek, Christiaan J. H.; Stansbury, Benjamin H., Jr.; Jamison, Thomas H.; McHose, Charles W.; and Dubson, Paul T., 3,939,500.
Dubuque Awning & Tent Company: *See—*
Frommelt, Cyril P.; and Frommelt, Sylvan J., 3,939,614.
du Chambon, Michel Georges Jean Picard, to B. V. Peximac. Furnace for incinerating waste materials. 3,939,783, Cl. 110-14.000.
Dudley, Tex Monroe, to Electroglas, Inc. Damping control for positioning apparatus. 3,940,676, Cl. 318-612.000.
Duensing, Willard John: *See—*
Butterworth, Elbert Roy; and Duensing, Willard John, 3,940,498.
Duffy, Willard W. Sprig planting apparatus. 3,939,785, Cl. 111-3.000.
Dully, Floyd I., to General Motors Corporation. Blocking member for locking mechanism of a vehicle occupant restraint belt retractor. 3,940,082, Cl. 242-107.40A.
Dumont, Philippe A., to Carrieres et Fours A Chaux Dumont-Wautier. Process and apparatus for the qualitative and quantitative analysis of solid material. 3,939,693, Cl. 73-19.000.
Duncan, Edward: *See—*
Alexander, Michael Richard; Duncan, Edward; McClements, Kenneth; and Spencer, John Roger, 3,940,600.
Dunstan, Phillip Elwyn; and Shapiro, Sam, to Boeing Company, The. Accelerating and decelerating moving walkway. 3,939,959, Cl. 198-16.0MS.
Du Pont de Nemours, E. I., and Company: *See—*
Ballard, Edward Cooper, 3,940,525.
Barkdoll, Archie E., 3,940,207.
Chambers, William John, 3,940,359.
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Donohue, Paul Christopher, 3,940,472.
Johnson, Donald R.; and Sawers, James R., Jr., 3,940,050.
Middleton, William Joseph, 3,940,402.
Schjeldahl, Gilmore T., 3,939,628.
Sommerfeld, Eugene G., 3,940,361.
Wessells, John Humphrey, 3,940,522.
Dursch, Friedrich, to E. R. Squibb & Sons, Inc. Antibiotic compositions and method. 3,940,483, Cl. 424-246.000.
Dutton-Lainson Company: *See—*
Brockelsby, Norman D., 3,939,729.
Brockelsby, Norman D., 3,939,793.
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Dykstra, Jerald P.: *See—*
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Dynapol: *See—*
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Dynell Electronics Corporation: *See—*
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E. C. Chemical Industries Co., Ltd.: *See—*
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E & M Communications Corporation: *See—*
Schonbrun, Leslie B.; and Schwaar, Friedrich W., 3,940,569.
E M I Limited: *See--*
Hounsfield, Godfrey Newbold; Beaven, Paul Anthony; and Lill, Brian Herbert, 3,940,599.
Hounsfield, Godfrey Newbold, 3,940,625.
Hounsfield, Godfrey Newbold, 3,940,626.
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Wade, Peter C.; and Vogt, Berthold Richard, 3,940,397.
Wade, Peter C.; and Vogt, Berthold Richard, 3,940,398.
East, Hudson C. Fish hook and assembly snapper master or improved fish hook and assembly (snapper master). 3,939,593, Cl. 43-41.200.
Eastern Poly Packaging Company: *See—*
Rivman, Samuel J.; and Da Costa, Alvaro, 3,940,307.
Eastman Kodak Company: *See—*
Dannelly, Clarence C.; and McIntire, John M., 3,940,261.
Eaton, John Littell, Jr.; Brill, Richard Henry; and Myers, Walter E., to SCM Corporation. Percolator. 3,939,760, Cl. 99-312.000.
Eaton, Larry R.: *See—*
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Eaton Yale Ltd.: *See—*
Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stanley C.; Margerum, Bruce A.; and Jarvi, Antti, 3,939,996.
Ebata, Yasuo, to Tokyo Shibaura Electrical Co., Ltd. Thyristor-firing apparatus using an acoustic surface wave device. 3,940,685, Cl. 323-23.000.
Echtler, Joseph P., to Consolidation Coal Company. Apparatus for measuring the flowrate of particulate solid material. 3,939,709, Cl. 73-228.000.
ECK Miller Transportation Corporation: *See—*
McBride, Thomas, 3,940,179.
Ecklund, Oscar Frederick. Rotary contactor for thermocouples. 3,940,199, Cl. 339-6.00R.
Ecodyne Corporation: *See—*
Robison, Herbert D., 3,940,337.
Ecologenics Corporation: *See—*
Adams, Jack C., 3,939,781.
Edcliff Instruments: *See—*
Darlington, William W., 3,940,673.
Edge Saw Manufacturing Company: *See—*
Misch, Dieter R.; and Huiber, Otto A., 3,939,688.
Edwards, Frederick H. Circuitry for load connection and disconnection. 3,940,660, Cl. 315-360.000.
Edwards, Robert B., to Nibco Inc. Reinforcement ring and seat for butterfly valve. 3,940,108, Cl. 251-306.000.
Egawa, Setsuya: *See—*
Horinouchi, Tsukasa; Egawa, Setsuya; and Sakamoto, Masahiro, 3,940,539.
Egorov, Georgy Borisovich: *See—*
Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
Ehnstrom, Lars Karl Johan, to Alfa-Laval AB. Continuous fermentation process. 3,940,492, Cl. 426-16.000.
Eibl, Hansjorg; and Nicksch, Alfar, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. 1,2-O-dialkylmethylidene-glycero-3-phosphatides. 3,940,423, Cl. 260-340.900.
Eichinger, Charles H., to Outboard Marine Corporation. Engine temperature control system. 3,939,807, Cl. 123-41.080.
Eid, Ellen G. Take-apart toy. 3,939,600, Cl. 46-17.000.
Eisai Co., Ltd.: *See—*
Suenaga, Eiichi; Tachibana, Shinro; and Sato, Nagayasu, 3,940,480.
Eishima, Kensuke: *See—*
Sakaki, Yoshihiro; and Eishima, Kensuke, 3,939,903.
Eisses, Jacob Albertus. Metal holder for disposing a guide structure on a concrete foundation. 3,939,617, Cl. 52-166.000.
Eiter, Karl, to Bayer Aktiengesellschaft. Process for the production of polyunsaturated compounds. 3,940,425, Cl. 260-345.900.
Ekama, Peter J.; Morrison, Larry A.; and Barnett, Charles B., to Diebold Incorporated. Pneumatic tube double-door side opening carrier construction. 3,940,091, Cl. 243-34.000.
Electroglas, Inc.: *See—*
Dudley, Tex Monroe, 3,940,676.
Electronor Corporation: *See—*
Thomas, Vaselios H.; and Pohto, Gerald R., 3,940,328.
Ellegast, Konrad, to Bayer Aktiengesellschaft. Spin stretching and spin stretch texturing of multifilament yarns. 3,939,639, Cl. 57-157.00R.
Ellingson, William A.; and Read, Alvin A., to Iowa State University Research Foundation, Inc. Method for producing three-dimensional real image using radiographic perspective views of an object. 3,940,619, Cl. 250-313.000.
Elliott Brothers (London) Limited: *See—*
Beeswing, Dennis Edwin, 3,940,764.
Elser, William F.: *See—*
Morrison, John; and Elser, William F., 3,939,787.
Emgushov, Djangar, to Jerrold Electronics Corporation. Radio frequency energy signalling apparatus. 3,940,699, Cl. 325-363.000.
Energy Development Associates: *See—*
Symons, Philip C., 3,940,283.
Energy Innovations: *See—*
Bergstresser, Ralph E., 3,939,814.
Engelbrecht, John W.; and Lockard, John C., to Kellwood Company. Composition and method for imparting fire resistance and water repellency to fabric. 3,940,355, Cl. 260-28.5AV.
Engelhardt, Albrecht: *See—*
Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, 3,940,489.
Engelmann, Guenter: *See—*
Grafinger, Wilhelm; Knabe, Lutz; Engelmann, Guenter; and Wagenlehner, Kurt, 3,940,765.
Enoguchi, Yuji: *See—*
Tanaka, Susumu; Enoguchi, Yuji; and Kawabata, Hidetoshi, 3,939,801.
Enos, George R.; Rosa, Richard J.; and Petty, Stanley W., to Avco Everett Research Laboratory, Inc. MHD generator with uniform voltage distribution. 3,940,639, Cl. 310-11.000.
Enos, George R.: *See—*
Petty, Stanley W.; Rosa, Richard J.; and Enos, George R., 3,940,640.
Erdelitsch, Herbert: *See—*
Buhl, Harro; Erdelitsch, Herbert; Machalitzky, Otto; and Seitter, Wolf, 3,940,579.
Erspamer, James R., to Sperry Rand Corporation. Latitude compensator for flux valve heading repeater system. 3,939,572, Cl. 33-361.000.
ESAB Manufacturing, Inc.: *See—*
Stearns, James B.; and Schmerling, Donald W., 3,940,586.

Eskeli, Michael. Power generator. 3,939,661, Cl. 60-682.000.
Espy, Patrick N., to United States of America, General Counsel-Code GP. Gas filled coaxial accelerator with compression coil. 3,939,816, Cl. 124-11.00R.
Espy, Ronald H.: *See—*
Goller, George N.; and Espy, Ronald H., 3,940,266.
Estey, Willard E., to Perkin-Elmer Corporation, The. Septum mounting and shielding assembly for sample injection in an analytical instrument. 3,939,713, Cl. 73-422.0GC.
Estrada, Luis Alberto: *See—*
Wielt, Warren Pierce; and Estrada, Luis Alberto, 3,940,648.
ETA A.G. Ebauches-Fabrik: *See—*
Charbonney, Adrien Maurice, deceased, 3,939,645.
Etablissement Public, Telediffusion de France: *See—*
Condamines, Roland J., 3,940,560.
Ethicon, Inc.: *See—*
Miller, David C.; and Sutton, Clifton C., 3,939,969.
Ethington, David A.; Wilmot, Richard D.; and Yamashiro, Herbert Y., to Hughes Aircraft Company. Digital detection criteria control device for video mapping, detection parameter control, optimum radar receiver selection and rejection of non-moving targets. 3,940,762, Cl. 343-5.0DP.
Ethyl Corporation: *See—*
Haefner, Albert J.; and Kucsma, Michael E., 3,940,001.
Niebylski, Leonard M.; Jarema, Chester P.; and Lee, Thomas E., 3,940,262.
Eue, Ludwig: *See—*
Draber, Wilfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert R., 3,940,391.
Evall, Irving: *See—*
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Evans Products Company: *See—*
Rogers, Gary W.; Tottie, Leroy A.; Hamilton, Vaughn G.; Goodwin, Orville O.; and Baker, Jean A., 3,939,746.
Everbrite Electric Signs, Inc.: *See—*
Trame, Charles E., 3,939,584.
Evers, King W.; and Larsen, George H., to Evers, King W.; and Larsen, George H. Method of providing a structural shape. 3,940,466, Cl. 264-45.300.
Exxon Research & Engineering Co.: *See—*
Clarke, George A., Jr.; and Harting, Gary L., 3,940,339.
Corbett, Luke W., 3,940,281.
Oswald, Alexis A.; Mueller, Wolfgang H.; and Hall, Daniel N., 3,940,374.
Rinker, James W.; and Jacobs, William M., 3,939,873.
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F. D. Farnam Co.: *See—*
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Helm, Herbert W., 3,939,723.
F & W Company Inc.: *See—*
Frank, Eldon M., 3,939,997.
Fabco, Incorporated: *See—*
Walters, Andrew C.; and Goss, William M., 3,939,686.
Fahey, Dennis M., to PPG Industries, Inc. Coating and combined sizing and coating composition for glass fibers. 3,940,357, Cl. 260-29.300.
Faille, Marc Della: *See—*
Mercier, Jean; Faille, Marc Della; and Bleiman, Claude, 3,940,546.
Faisandier, Jacques. Pressure sensor. 3,939,758, Cl. 92-1.000.
Fantechi, Giuliano: *See—*
Brandigi, Carlo; and Fantechi, Giuliano, 3,939,759.
Farfaglia, Silvio T., to Phillips Petroleum Company. Vacuum carton transfer apparatus and method. 3,939,960, Cl. 198-20.00R.
Faria, Sixdeniel; and Williams, Lyle K., to GTE Sylvania Incorporated. Calcium tungstate X-ray phosphors and method for preparing same. 3,940,347, Cl. 252-301.500.
Farnam, Robert G.; and Passarella, Michael T., to F. D. Farnam Co. Making insulator gaskets. 3,939,892, Cl. 156-252.000.
Farnum, Eugene H.; and Fries, R. Jay, to United States of America, Energy Research and Development Administration. Method for nondestructive fuel assay of laser fusion targets. 3,940,617, Cl. 250-303.000.
Farrand Optical Co., Inc.: *See—*
La Russa, Joseph Anthony, 3,940,203.
Farrell, John J., to Farrell Patent Company. Injection of plastic in molding machine. 3,940,223, Cl. 425-244.000.
Farrell Patent Company: *See—*
Farrell, John J., 3,940,223.
Farris, Edsel S., to Boeing Company, The. Jet flow deflector for aircraft. 3,940,092, Cl. 244-12.00D.
Fascination, Ltd.: *See—*
Runte, Robert Ralph, 3,940,136.
Fassett, Matthew; and Balzano, Quirino, to Raytheon Company. Cylindrical array antenna with radial line power divider. 3,940,770, Cl. 343-754.000.
Fathi, Houchang, to Sintef. Braced insulating element and method for its manufacture. 3,940,526, Cl. 428-117.000.
Faughnan, Brian Wilfred: *See—*
Crandall, Richard Seely; and Faughnan, Brian Wilfred, 3,940,205.
Faulstich, George W., to Three Sisters Ranch Enterprises. Widemouth jar neck and plastic cap construction. 3,940,004, Cl. 215-256.000.
Favre, John A., to Phillips Petroleum Company. Removal of radon from hydrocarbon streams. 3,940,471, Cl. 423-249.000.
Fawcett, William F. Bull fighting game. 3,940,130, Cl. 273-1.00E.
Fech, John, Jr.; and Poliniak, Eugene Samuel, to RCA Corporation. Electron beam recording media and method of recording. 3,940,507, Cl. 427-43.000.
Federal-Mogul Corporation: *See—*
Clark, William E.; and Butler, John David, 3,939,551.
Fedorov, Mikhail Ivanovich: *See—*
Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.
Fehr, George V.: *See—*
Gosse, Joseph F.; and Fehr, George V., 3,939,665.
Feigt, Ingmar: *See—*
Jantsch, Ottomar; Feigt, Ingmar; and Willig, Wolf Rudiger, 3,939,555.
Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., to Western Electric Company, Inc.; and Bell Telephone Laboratories, Incorporated. Methods of solid-phase bonding mating members through an interposed pre-shaped compliant medium. 3,939,559, Cl. 29-628.000.
Fern, Robert W., to Libbey-Owens-Ford Company. Soldering apparatus. 3,940,046, Cl. 228-8.000.
Fernandez, Rafael Herrera, to Industrias Rumbo, S.A. Electronic devices for the automatic control of gain and roll-off in amplifiers. 3,940,707, Cl. 330-29.000.
Ferro Corporation: *See—*
Harrington, Roy V.; and Beal, Donald F., 3,940,255.
Fertl, Walter H.: *See—*
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Feterl, Leon G., to SOS Consolidated, Inc. Method of manufacturing a trailer frame structure. 3,939,553, Cl. 29-469.000.
Fiat-Allis Construction Machinery, Inc.: *See—*
Heidelbach, Charles A., 3,940,101.
Fiberwoven Corporation, The: *See—*
Smith, Alexander M., II, 3,940,532.
Fibre-Thane Homes, Inc.: *See—*
Tunstall, Reginald V., 3,940,468.
Fick, Herbert J.; and Mahagnoul, Edward J., to G. T. Schjeldahl Company. Electrical laminate. 3,940,534, Cl. 428-228.000.
Ficken, William H.: *See—*
Schulien, Howard E.; Ficken, William H.; and Sgambati, Robert J., 3,939,716.
Fiel, Larry D.: *See—*
Kross, Robert W.; Fiel, Larry D.; Crockett, Charles R.; Neely, George B.; and Benton, Louis J., 3,940,019.
Findlay, Alexander G., to Monsanto Company. Integrated composite semiconductor light-emitting display array having LED's and selectively addressable memory elements. 3,940,756, Cl. 340-324.00M.
Finike Italiana Marposs, Soc. In Accomandita Semplice di Mario Possati & C.: *See—*
Albertazzi, Gastone, 3,939,567.
Finlay, Ian C.: *See—*
Harrow, Geoffrey A.; Mills, Walter D.; Wilson, John L.; and Finlay, Ian C., 3,939,813.
Finney, Philip F., to Thermo-Couple Products Company, Inc. Surface thermocouple. 3,939,554, Cl. 29-573.000.
Firestone Tire & Rubber Company, The: *See—*
Hergenrother, William L., 3,940,372.
Firmenich & Cie: *See—*
Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,940,502.
Firstenberg, Harold S. Vehicle track retention device. 3,939,930, Cl. 180-5.00A.
Fischer, Gudrun: *See—*
Rothert, Klaus-Dieter; Stilkenbaumer, Herbert; Fischer, Gudrun; Madler, Armin; and Ross, Ulrich, 3,939,710.
Fischer, Leonard: *See—*
McCarthy, John P.; Moyer, John; and Fischer, Leonard, 3,940,217.
Fischer, Markus, to Haas, Paul. Method and installation for the detection of a source generating electro-magnetic oscillations. 3,940,700, Cl. 325-363.000.
Fischer, Roman: *See—*
Reif, Werner; Fischer, Roman; and Pommer, Horst, 3,940,445.
Fisher, William J., to Braverman, Maynard, a part interest. Remote switch actuating device. 3,939,725, Cl. 74-503.000.
Fishman, Bernard, to Thiokol Corporation. Reverse acting rolling diaphragm for expelling liquids. 3,940,031, Cl. 222-386.500.
Fishman, Louis: *See—*
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Fisons Ltd.: *See—*
Corbett, John Roger; and Percival, Albert, 3,940,416.
Fitzgerald, Brian P., to Digital Equipment Corporation. Interconnecting unit for independently operable data processing systems. 3,940,743, Cl. 340-172.500.
Fitzi, Konrad, to Ciba-Geigy Corporation. Imidazole derivatives in the treatment of pain. 3,940,486, Cl. 424-263.000.
Flamagas S.A.: *See—*
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Flament, Ivon: *See—*
Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,940,502.

Flanders, Robert D. Collapsible reusable barrel for fluids. 3,940,008, Cl. 220-5.00R.

Fleck, Fritz: *See—*
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Flier, Ronald J., to Ralston Purina Company. Protein product and method for forming same. 3,940,495, Cl. 426-104.000.

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Flynn, Joseph: *See—*
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Flynn, William P.: *See—*
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Ford Motor Company: *See—*
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Foster Wheeler Energy Corporation: *See—*
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Fougeres, Marc Paul Andre: *See—*
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Fournier, Jean, to Le Joint Francais. Pneumatic seal. 3,940,152, Cl. 277-34.000.

Fowler, Richard A.: *See—*
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Fox, Raymond Graham: *See—*
Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, 3,939,579.

Fox, Richard C.; and Jones, Thornton K., to Chevron Research Company. Candle wicking. 3,940,233, Cl. 431-325.000.

Fox, Thomas E.; Scannell, John W.; and Andersen, Clifford H., to C. P. Clare & Company. Reed switch relay. 3,940,722, Cl. 335-151.000.

Fox, Wayne F., to Triple "F", Inc. Non-protein nitrogen feed product and method for producing the same. 3,940,493, Cl. 426-69.000.

Franco, John A., to Raymond Lee Organization, Inc., The, a part interest. Game of balance. 3,940,129, Cl. 273-1.00R.

Frank, Eldon M., to F & W Company Inc. Tractor mounted implement device. 3,939,997, Cl. 214-131.00A.

Frank, Jan: *See—*
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Franklin, Freddie L.: *See—*
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Franz, Gunther; Heinrich, Karl; and Poppe, Herbert, to Hoechst Aktiengesellschaft. Unstreteched polyethylene terephthalate yarn in continuous stretching and false twist texturizing processes. 3,939,637, Cl. 57-140.00R.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef; and Riessberger, Klaus, 3,939,774.

Freidenzon, Evgeny Zakharovich: *See—*
Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.

French, Geoffrey Richard: *See—*
Adey, Anthony John; French, Geoffrey Richard; Leonard, Gordon Harris; and Williams, Malcolm, 3,939,738.

Freund, Erich. Biasing pads for eyeglass frames. 3,940,206, Cl. 351-111.000.

Frey, Hans-Helmut; and Klug, Helmut, to Hoechst Aktiengesellschaft. Thermoplastic composition comprising PVC and chlorinated polyethylene. 3,940,456, Cl. 260-897.00C.

Freytag, Wolfram Gustav; Ney, Karl Heinz; and Wirotama, I. Poetoe Gde, to Lever Brothers Company. Fontina cheese flavor. 3,940,501, Cl. 426-535.000.

Fried, John H.: *See—*
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Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Bruckert, Klaus; Hoffmann, Herbert; Kutscher, Gerhard; Neubert, Rolf; and Wehling, Rolf, 3,939,638.

Friedman, Sam: *See—*
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Friedrichsfeld GmbH. Steinzeug-und Kunststoffwerke: *See—*
Heimke, Gunther; Griss, Peter; Von Andrian-Werburg, Hanns; Heil, Herbert; and Wachter, Paul, 3,939,497.

Fries, R. Jay: *See—*
Farnum, Eugene H.; and Fries, R. Jay, 3,940,617.

Frisch, Erling, deceased (by Randal, Dorothy, executrix); and Andrews, Harry N., to Westinghouse Electric Corporation. Nuclear reactor internals construction and failed fuel rod detection system. 3,940,311, Cl. 176-36.00R.

Frohberger, Paul-Ernst; Urbschat, Otto Ewald, deceased (by Urbschat, Gertrud Emma Maria Gerda, administrator); and Hermann, Gunther, to Bayer Aktiengesellschaft. Repellent aminoalkyldithiocarbamic acids. 3,940,488, Cl. 424-286.000.

Frohberger, Paul-Ernst: *See—*
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Kramer, Wolfgang; Buchel, Karl Heinz; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,414.

Frommelt, Cyril P.; and Frommelt, Sylvan J., to Dubuque Awning & Tent Company. Loading dock seal. 3,939,614, Cl. 52-2.000.

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Frommelt, Cyril P.; and Frommelt, Sylvan J., 3,939,614.

Fuji Photo Film Co., Ltd.: *See—*
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Fujimoto, Shinichiro. Electromotive massage apparatus for beating and kneading body. 3,939,826, Cl. 128-55.000.

Fujinami, Nobuakira; and Nagano, Tadashi, to Unicharm Kabushiki Kaisha. Article for treating menstrual fluid. 3,939,838, Cl. 128-290.00R.

Fujitsu Limited: *See—*
Kurita, Shoichi; Sata, Naohide; Ogawa, Hideki; and Hiratsuka, Yoshitaka, 3,940,705.
Takagi, Mikio; Kamioka, Hajime; Nakayama, Kazufumi; and Shimoda, Haruo, 3,940,288.

Fujiwara, Allan N.; Acton, Edward M.; and Henry, David W., to Stanford Research Institute. Streptozotocin analogs. 3,940,383, Cl. 260-210.00R.

Fukoku Kogyo Company Limited: *See—*
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Furuishi, Haruhisa: *See—*
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Furukawa, Junji; Haga, Kazuo; and Kobayashi, Eiichi, to Bridgestone Tire Company Limited. Method for manufacturing of butadiene-propylene copolymers. 3,940,378, Cl. 260-85.30R.

G. D. Searle & Co.: *See—*
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G. T. Schjeldahl Company: *See—*
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Gabbard, Ova Gene; Kaul, Pradeep; and Hangen, Joaquin, to Digital Communications Corporation. Remote master/slave station clock. 3,940,558, Cl. 178-69.50R.

Gabor, Joseph: *See—*
Steigelmann, Edward F.; Hughes, Robert D.; and Gabor, Joseph, 3,940,469.

Gaeth, Rudolf; and Linke, Roland, to BASF Aktiengesellschaft. Reversible moisture-vapor-absorptive sheet structures and process. 3,940,535, Cl. 428-260.000.

GAF Corporation: *See—*
Copes, Joseph P., 3,940,258.
Sthare, Derwin; and Chambers, Richard F., 3,940,247.

Gaines, John W.: *See—*
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Gajda, Janusz: *See—*
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Gallagher, Nicholas D.; Johnston, Herbert N.; Valihura, Robert J.; and Hull, Henry E., to United States of America, Interior. Adhesive guard hair removal. 3,939,676, Cl. 69-22.000.

Gallanis, George P.: *See—*
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Galzy, Pierre: *See—*
Commeyras, Auguste; Arnaud, Alain; Galzy, Pierre; and Jallageas, Jean-Claude, 3,940,316.

GAR Industries Ltd.: *See—*
Bruce, Albert I., 3,939,910.

Garbuio, Carlo. Ski boot with flexible interconnected top and bottom portions. 3,939,582, Cl. 36-2.5AL.

Gardner, Gerald Marvin, to Image Analysing Computers Limited. Subtractive image analysis. 3,940,557, Cl. 178-6.800.

Garot, Claude, to Societe Universelle de Fabrication d'Appareils Menagers S.U.F.A.M. Linen drier. 3,939,574, Cl. 34-163.000.

Garsky, Victor M., to American Home Products Corporation. p-Glu-D-Phe-Trp-Ser-Tyr-2-Me.Ala-Leu-Arg-Pro-NH_2 and intermediates. 3,940,380, Cl. 260-112.5LH.

Gastrock, William Henry: *See—*
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Gautschi, Fritz: *See—*
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Gebhardt, Richard. Stow roller train for storage and conveyance of cargo. 3,939,962, Cl. 198-127.00R.

Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
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Geffriaud, Jean Paul: *See—*
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Gehring, Donald H. Double-balanced modulating and demodulating apparatus. 3,940,716, Cl. 332-43.00B.

General Crane Industries Limited: *See—*
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General Dynamics Corporation: *See—*
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General Electric Company: *See—*
Arneson, Harold N.; and Heitlinger, Louis J., 3,939,824.
Bittner, John R., 3,939,957.
Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., 3,939,538.
Houston, John M.; Young, James R.; and Whetten, Nathan R., 3,940,620.
Mark, Victor, 3,940,366.
Nuss, James J., 3,939,817.
Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., 3,940,682.
Sawyer, Thomas F., 3,939,895.
Steigerwald, Robert L., 3,940,633.
Wielt, Warren Pierce; and Estrada, Luis Alberto, 3,940,648.

General Foods Corporation: *See—*
Haas, Gerhard J., 3,940,476.

General Instrument Corporation: *See—*
Chesney, John; and Kruczek, Chester R., 3,940,666.

General Motors Corporation: *See—*
Creps, Wendell D., 3,939,654.
Dully, Floyd I., 3,940,082.
Horvath, Robert A., 3,939,658.
Kolbe, William H.; and Unger, Donald C., 3,939,523.
Molloy, Edward W., 3,940,193.
Nagy, Louis L., 3,940,696.
Stocker, Harold L., 3,940,153.
Williams, Richard D.; and Michaels, Fred G., 3,940,580.

Genesi, Robert C., to Sprague Electric Company. Semiconductor I.C. with protection against reversed power supply. 3,940,785, Cl. 357-48.000.

Gentiluomo, Joseph A. Golf ball. 3,940,145, Cl. 273-218.000.

George, Kenneth D.: *See—*
Arino, Hirofumi; Cosolito, Frank J.; George, Kenneth D.; and Thornton, Alfred K., 3,940,318.

Gerber, Robert L., to United States of America, Navy. Chemiluminescent marker apparatus. 3,940,605, Cl. 240-2.250.

Gerdec: *See—*
Mercier, Jean; Faille, Marc Della; and Bleiman, Claude, 3,940,546.

Gerke, Peter: *See—*
Rutkowski, Karl; Bock, Helmuth-Joachim; and Gerke, Peter, 3,940,568.

Gershnow, Abraham H., to Centronics Data Computer Corporation. High speed solenoid employing multiple springs. 3,940,726, Cl. 335-274.000.

Gershon, Milton, to Thiokol Corporation. Rolling diaphragms for expelling liquids. 3,940,032, Cl. 222-386.500.

Gettmann, Hermann, to Tour Agenturer AB. System for regulating the temperature in rooms, more particularly for cooling rooms. 3,939,905, Cl. 165-49.000.

Giacosa, Dante, to Sira Societa Industriale Richerche Automotoristiche. Power unit for vehicles incorporating an automatic stepless speed change gear. 3,939,732, Cl. 74-701.000.

Gidewall, Kenneth L.; and Heavner, Larry W., to C. V. P. Systems Inc. Packaging apparatus. 3,939,624, Cl. 53-112.00B.

Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, to Politechnika Slaska im Wincentego Patrowskiego. Fireproof inorganic protective coating and the method of its production. 3,940,516, Cl. 427-372.000.

Gilbert & Baker Manufacturing Company: *See—*
McCrory, Rollin John; and Robinson, George Dennis, Jr., 3,940,020.

Gili, Ricardo Aguirre, to Flamagas S.A. Refill device for gas lighters. 3,940,015, Cl. 221-96.000.

Gill, George H., to United States of America, Navy. Submarine or vehicle steering system. 3,940,674, Cl. 318-589.000.

Gill, Walter L. Electric power means for vehicles. 3,939,935, Cl. 180-65.00R.

Gillemot, George W., to Thompson, John T., a part interest. Cable reclamation method and apparatus. 3,939,882, Cl. 141-231.000.

Gimple, James J.; Lasley, Charles T.; and Rogers, Daniel M., to Champion Spark Plug Company. Electrostatic spray gun for powder coating material. 3,940,061, Cl. 239-15.000.

Giori, Gualtiero, to De La Rue Giori S.A. Processing of sheets of printed security papers into bundles and packets. 3,939,621, Cl. 53-23.000.

Girling Limited: *See—*
Asquith, Anthony, 3,939,727.
Habgood, Gordon Alfred, 3,939,945.

Giuliani, John F.: *See—*
Marquardt, Charles L.; and Giuliani, John F., 3,940,289.

Givens, Wyatt W.: *See—*
Dennis, Charles L.; Givens, Wyatt W.; and Hickman, John B., 3,940,610.

GKN Sankey Limited: *See—*
Golding, Cyril George, 3,939,860.

Glaros, George S.: *See—*
Plakas, Chris J.; and Glaros, George S., 3,940,250.

Glaser, Karl. Stepping motor. 3,940,642, Cl. 310-20.000.

Glass, Cecil A., to United States of America as represented by the Secretary of the Navy. Fuel-air explosive bomblet. 3,940,443, Cl. 102–6.

Glise, Andre: *See—*
Petro, Claude; and Glise, Andre, 3,939,898.

Global Marine, Inc.: *See—*
Anders, Edward O., 3,939,789.
Johnson, Charles R., 3,939,990.
Person, Abraham, 3,939,991.

Glotin, Bernard J. P.; and Guimard, Andre J., to Schlumberger Technology Corporation. Removable downhole measuring instruments with electrical connection to surface. 3,939,705, Cl. 73-151.000.

Glukhikh, Vasily Andreevich: *See—*
Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.

Goebel, Henry R.; and Flynn, Joseph, to Western Kraft Corporation. Tissue carton. 3,940,054, Cl. 229-51.00D.

Goerden, Leonard: *See—*
Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, 3,940,350.

Goldfein, Harold A., to Inca Inks, Inc. Hydrostatic transmission pump. 3,939,656, Cl. 60-381.000.

Golding, Cyril George, to GKN Sankey Limited. Closure units for containers. 3,939,860, Cl. 137-212.000.

Goldman, Irving M.: *See—*
Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,940,502.

Goldman, Leman, Jr.: *See—*
Sherman, Samuel Mark; and Goldman, Leman, Jr., 3,940,769.

Goldmann, Wolf: *See—*
Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Goller, George N.; and Espy, Ronald H., to Armco Steel Corporation. Austenitic stainless steel. 3,940,266, Cl. 75-128.00A.

Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stanley C.; Margerum, Bruce A.; and Jarvi, Antti, to Eaton Yale Ltd. Tree harvesting apparatus. 3,939,996, Cl. 214-82.000.

Golovoy, Amos: *See—*
Labana, Santokh S.; Golovoy, Amos; and van Oene, Henk, 3,940,453.

Gonos, Michael G.; Ives, Kenneth D.; and Vranka, Ronald S., to United States Steel Corporation. Method and apparatus for locating improperly positioned or bent rolls. 3,939,568, Cl. 33-143.00L.

Gonzalez, Jose Leobardo, to Monocar HC Internacional, S.A. Vacuum advance regulating valve. 3,939,812, Cl. 123-117.00A.

Gonzalez, Juan M.; and Nichols, William V., Jr., to Reynolds Metals Company. Furnace effluent filter for a carbon baking furnace. 3,940,237, Cl. 432-72.000.

Goodnight, Hershel E.: *See—*
Reed, Robert D.; Zink, John Smith; and Goodnight, Hershel E., 3,940,234.

Goodwin, Orville O.: *See—*
Rogers, Gary W.; Tottie, Leroy A.; Hamilton, Vaughn G.; Goodwin, Orville O.; and Baker, Jean A., 3,939,746.

Gore, David E. Electroacoustic transducers. 3,939,942, Cl. 181-157.000.

Goss, William M.: *See—*
Walters, Andrew C.; and Goss, William M., 3,939,686.

Gosse, Joseph F.; and Fehr, George V., to Bethlehem Steel Corporation. Method for protecting metal H-piling in underwater environments and protected H-piling. 3,939,665, Cl. 61-54.000.

Goto Drop Forging Co., Ltd.: *See—*
Takasaki, Shuhei; and Goto, Yasumoto, 3,940,098.

Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, to Kawasaki Steel Corporation. Method for producing single-oriented electrical steel sheets having a high magnetic induction. 3,940,299, Cl. 148-111.000.

Goto, Tomomichi: *See—*
Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, 3,940,299.

Goto, Yasumoto: *See—*
Takasaki, Shuhei; and Goto, Yasumoto, 3,940,098.

Gottschalk, Klaus: *See—*
Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., 3,939,538.

Goudikian, Edward, to Tele-Assemblies. Apparatus for combining a central telephone trunk line with a customer telephone trunk line. 3,940,570, Cl. 179-18.0AH.

Gouvenot, Daniel: *See—*
Mazier, Georges; Geffriaud, Jean Paul; and Gouvenot, Daniel, 3,939,664.

Graalmann, Franz: *See—*
Varges, Gunter; and Graalmann, Franz, 3,939,790.

Grabovac, Bosko, to Consolidated Devices, Inc. Power torque wrench. 3,939,924, Cl. 173-163.000.

Grachev, Leonid Pavlovich: *See—*
Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,939,961.

Graco Inc.: *See—*
Ware, Lyle A.; Sundelius, Dennis J.; and Melquist, Marlin R., 3,940,065.

Grafinger, Wilhelm; Knabe, Lutz; Engelmann, Guenter; and Wagenlehner, Kurt, to Siemens Aktiengesellschaft. Arrangement for a passive responder for a position finding system. 3,940,765, Cl. 343-6.80R.

Graifer, Alexandr Khaimovich: *See—*
Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Granat, Rodney John, to A.C.I. Operations Pty. Limited. Safety closure means for pressurized bottles and other like containers. 3,940,005, Cl. 215-325.000.

Grand, Paul Sheldon, to Colgate-Palmolive Company. Solubilization of the zinc salt of 1-hydroxy-2-pyridinethione. 3,940,482, Cl. 424-245.000.

Granges Essem Aktiebolag: *See—*
Sieurin, Sven Ivar, 3,940,264.

Gray, David, to British Gas Corporation. External pipe coatings for a reinforced pipe. 3,939,874, Cl. 138-145.000.

Gray, Frederick William; Richter, Virgil John; and Limekiller, Andrew Henry, to Colgate-Palmolive Company. Granular detergent compositions. 3,940,341, Cl. 252-105.000.

Graybill, Clinton L. Air-valve type carburetor. 3,940,460, Cl. 261-40.000.

Grayzel, Joseph, to Datascope Corporation. Single-chamber, multisection balloon for cardiac assistance. 3,939,820, Cl. 128-1.00D.

Green, Leland Dale, to Xerox Corporation. Reproduction of information from information-bearing discs. 3,940,574, Cl. 179-100.10B.

Greenberg, Mishel: *See—*
Russo, John A.; and Greenberg, Mishel, 3,940,024.

Greene, George L.; Williams, Sylvester A.; and Franklin, Freddie L. Self-planter. 3,939,786, Cl. 111-3.000.

Greenspan, George; Rees, Richard W.; and Russell, Peter B., to American Home Products Corporation. Synthesis of 2,6-diaminopyrimidines. 3,940,393, Cl. 260-256.40N.

Greer, Homer L.; and Newbold, William F., to Honeywell, Inc. Closed pressure rebalance system for measuring the rate of fluid flow. 3,939,708, Cl. 73-205.00R.

Greif Bros. Corporation: *See—*
Dubois, Robert A.; and Gushard, William H., 3,940,011.

Gresser, Gerhard: *See—*
Hesler, Dietrich; Gresser, Gerhard; and Brandstetter, Helmut, 3,939,611.

Griffin, Ray D.: *See—*
Needham, Donald G.; and Griffin, Ray D., 3,940,547.

Griffin, Richard H., to International Telephone and Telegraph Corporation. Telephone cord mandrel end retainer. 3,940,228, Cl. 425-403.000.

Griffiths, Aubrey Ronald. Containers. 3,940,007, Cl. 220-4.00F.

Griffiths, Donald E.; Koestner, Joseph H.; and Norton, David G., to International Business Machines Corporation. Stacked flexible record disk storage apparatus having enhanced disk separation. 3,940,794, Cl. 360-99.000.

Griss, Peter: *See—*
Heimke, Gunther; Griss, Peter; Von Andrian-Werburg, Hanns; Heil, Herbert; and Wachter, Paul, 3,939,497.

Grogan, Martin L., to Rockwell International Corporation. Solid state AC power relay. 3,940,634, Cl. 307-252.0UA.

Gross, Heinz: *See—*
Schne", Claude R.; Hengartner, Kurt; and Gross, Heinz, 3,940,653.

Gross, Richard S. Self-hinged, buoyant weir plate for skimmers. 3,939,505, Cl. 4-172.170.

Gross, Stanley Joseph, to Biological Developments, Inc. Radioimmune method of assaying quantitatively for a hapten. 3,940,475, Cl. 424-1.000.

Grossmann, Hans-Hermann; Burg, Karlheinz; and Sextro, Gunter, to Hoechst Aktiengesellschaft. Moulding composition based on poly-(oxymethylene). 3,940,365, Cl. 260-45.90P.

Groupement pour les Activites Atomiques et Avancees "GAAA": *See—*
Martin, Jean; Ollier, Jean-Louis; and Petit, Paul, 3,940,150.

Grubbe, John R.: *See—*
Sherwin, Ian M.; and Grubbe, John R., 3,940,257.

Grumman Aerospace Corporation: *See—*
Kress, Robert W.; and Stettler, Martin C., 3,940,094.

GTE Sylvania Incorporated: *See—*
Ashley, Albert H., 3,940,571.
Faria, Sixdeniel; and Williams, Lyle K., 3,940,347.
Thomas, Martha J. B.; Fowler, Richard A.; and Larson, Robert C., 3,940,326.

Guichard, Jean-Claude; and Chauvelier, Claude, to Institut National de Recherche Chimique Appliquee. Method and apparatus for measuring the concentration of solid particles suspended in a gas phase. 3,939,694, Cl. 73-28.000.

Guidoni, Christian. Brassiere with sliding ties, and arranged in a general "V" shape, in particular for bathing suits. 3,939,845, Cl. 128-492.000.

Guigliano, Anthony V., to Deltrol Corporation. Combination manual and pilot operated directional control valve. 3,939,870, Cl. 137-624.270.

Guile, Donald L.; and Smith, Robert K., to Corning Glass Works. Size-graded ternary batch for bonded basic refractory shapes. 3,940,279, Cl. 106-58.000.

Guimard, Andre J.: *See—*
Glotin, Bernard J. P.; and Guimard, Andre J., 3,939,705.

Gulbrandsen, Rudolph G.: *See—*
Kreeft, John; Stanislaw, Peter; and Gulbrandsen, Rudolph G., 3,939,537.

Gulf Research & Development Company: *See—*
Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,940,330.

Gulf States Paper Corporation: *See—*
Vandemark, Joseph S.; and Seith, Robert T., 3,939,606.

Gulotta, Joseph A.; Knavish, Leonard A.; and Sensi, John E., to PPG Industries, Inc. Apparatus and method for controlling the flatness of a newly-formed continuous sheet of flat glass. 3,940,256, Cl. 65-65.00A.

Gunzel, Rudolph M., Jr.; James, Donald R.; and Radecki, Tony, to Meiko, Incorporated. Spray apparatus. 3,940,069, Cl. 239-318.000.

Gupta, Mohan L.: *See—*
Brandwein, Rowland; and Gupta, Mohan L., 3,940,679.

Gushard, William H.: *See—*
Dubois, Robert A.; and Gushard, William H., 3,940,011.

Gutner, Kenneth H. Furniture bracket and method. 3,940,212, Cl. 403-405.000.

Gybowski, Frank. Game device. 3,940,141, Cl. 273-143.00R.

Gyromat Corporation, The: *See—*
Wiggins, Richard F., 3,939,855.

H. W. Hart Mfg. Co.: *See—*
Hart, Harold W.; and Hart, Warren H., 3,940,106.

Haas, Georges; Jenny, Erwin F.; and Rossi, Alberto, to Ciba-Geigy Corporation. New dicarboxylic acids and derivatives. 3,940,434, Cl. 260-475.0SC.

Haas, Gerhard J., to General Foods Corporation. Oral preparations for preventing dental plaque. 3,940,476, Cl. 424-49.000.

Haas, Paul: *See—*
Fischer, Markus, 3,940,700.

Habgood, Gordon Alfred, to Girling Limited. Closed-loop type disc brake. 3,939,945, Cl. 188-73.400.

Hack, Siegfried, to Raymond Lee Organization, Inc., The, a part interest. Christmas tree ornament. 3,940,521, Cl. 428-7.000.

Haefner, Albert J.; and Kucsma, Michael E., to Ethyl Corporation. Recyclable plastic containers. 3,940,001, Cl. 215-1.00C.

Haeusler, Jochen; Schmirl, Manfred; and West, Dietmar, to Siemens Aktiengesellschaft. Apparatus for wrapping a compound-curved conductor bar. 3,940,073, Cl. 242-7.080.

Haga, Kazuo: *See—*
Furukawa, Junji; Haga, Kazuo; and Kobayashi, Eiichi, 3,940,378.

Hagele, Gerhard, to Zahnradfabrik Friedrichshafen AG. Housing flange for worm gear bearings. 3,940,192, Cl. 308-189.00R.

Hagen, Edward L.: *See—*
Nudenberg, Walter; Hagen, Edward L.; Little, Julian R.; and Mao, Chung-Ling, 3,940,396.

Hale, Frank L.: *See—*
Hale, John D.; Hale, Frank L.; and Hale, Samuel J., Jr., 3,939,949.

Hale, John D.; Hale, Frank L.; and Hale, Samuel J., Jr. Hydraulic system for braking truck engines. 3,939,949, Cl. 192-3.0TR.

Hale, Samuel J., Jr.: *See—*
Hale, John D.; Hale, Frank L.; and Hale, Samuel J., Jr., 3,939,949.

Hall, Daniel N.: *See—*
Oswald, Alexis A.; Mueller, Wolfgang H.; and Hall, Daniel N., 3,940,374.

Hall, Ervin T.; Talbert, Miles E.; Walsh, James R.; and Hinkle, Max E., to Thomasville Products, Inc. Mattress and cushioning construction. 3,939,508, Cl. 5-345.00R.

Hall, Warren L.: *See—*
Mock, Howard C.; Isaac, Kenneth N.; Disparte, Charles P.; Hall, Warren L.; and Beasely, James, 3,940,744.

Halverson, Maynard L., to Sweden Freezer Manufacturing Co. Frozen carbonated drink dispensing system. 3,939,667, Cl. 62-188.000.

Hamilton, George Henry; Turner, Robert McLean; and Ward, Jesse Lee, Jr., to Solar Energy Company. Solar energy heating module and assembly. 3,939,818, Cl. 126-270.000.

Hamilton, Robert W., to G. D. Searle & Co. Esters and amides of 4,5-dihydrobenz[g]indazole-3-carboxylic acids and related compounds. 3,940,418, Cl. 260-310.00R.

Hamilton, Vaughn G.: *See—*
Rogers, Gary W.; Tottie, Leroy A.; Hamilton, Vaughn G.; Goodwin, Orville O.; and Baker, Jean A., 3,939,746.

Hammann, Ingeborg: *See—*
Hoffmann, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,940,457.

Hanaoka, Masanori, to Toyota Jidosha Kogyo Kabushiki Kaisha. Engine misfire detection system. 3,939,711, Cl. 73-346.000.

Hangen, Joaquin: *See—*
Gabbard, Ova Gene; Kaul, Pradeep; and Hangen, Joaquin, 3,940,558.

Hanna, Daniel C. Module car wash. 3,939,516, Cl. 15-53.0AB.

Hansen, Paul L.: *See—*
Bleak, Thomas M.; and Hansen, Paul L., 3,940,593.
Bleak, Thomas M.; and Hansen, Paul L., 3,940,594.

Hansson, Bengt Eve; and Tischlinger, Edward A., to Astra Pharmaceutical Products Inc. Piston construction for syringes. 3,939,833, Cl. 128-218.00P.

Harasek, Richard J., to Motorola, Inc. Tunable electrical musical instrument. 3,939,751, Cl. 84-1.170.

Harcuba, Siegfried; and Dits, Herbert, to Harcuba, Siegfried. Profile press and precision cutting apparatus with a pressure multiplier. 3,939,747, Cl. 83-637.000.

Hardiman, Russell J.; and Smith, Stanley K., to Standard Pressed Steel Co. Tightening method and system. 3,939,920, Cl. 173-1.000.

Hare, Woodrow W.: *See—*
Harrell, Edsel A.; Sparks, Alton N.; Perkins, William D.; and Hare, Woodrow W., 3,939,883.

Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, to Kissei Yakuhin Kogyo Kabushiki Kaisha. Aromatic carboxylic amide derivatives. 3,940,422, Cl. 260-340.500.

Harrell, Edsel A.; Sparks, Alton N.; Perkins, William D.; and Hare, Woodrow W., to United States of America, Agriculture. Machine to fill insect rearing cells with diet. 3,939,883, Cl. 141-231.000.

Harrington, John B., to Hughes Aircraft Company. Recirculating electric and acoustic tapped delay line. 3,940,720, Cl. 333-30.00R.

Harrington, Roy V.; and Beal, Donald F., to Ferro Corporation. Process for making cordierite glass-ceramic having nucleating agent and increased percent cordierite crystallinity. 3,940,255, Cl. 65-33.000.

Harris, Arthur M., to Key Pharmaceuticals, Inc. Hemorrhoidal device. 3,939,842, Cl. 128-401.000.

Harris, Bert C.: *See—*
Ross, James A.; and Harris, Bert C., 3,939,776.
Ross, James A.; and Harris, Bert C., 3,939,778.

Harrow, Geoffrey A.; Mills, Walter D.; Wilson, John L.; and Finlay, Ian C., to Shell Oil Company. Liquid fuel vaporizing device for internal combustion engines. 3,939,813, Cl. 123-122.00A.

Harrow, Terence Alfred, to G. D. Searle & Co. Acid chloride synthesis. 3,940,439, Cl. 260-544.00Y.

Hart, Granville Spencer; and Brandewie, Joseph Edward, to AMP Incorporated. Method and apparatus for feeding a pair of wires. 3,939,552, Cl. 29-427.000.

Hart, Harold W.; and Hart, Warren H., to H. W. Hart Mfg. Co. Latching valve for extendible watering system for fowls. 3,940,106, Cl. 251-100.000.

Hart, Warren H.: *See—*
Hart, Harold W.; and Hart, Warren H., 3,940,106.

Harting, Gary L.: *See—*
Clarke, George A., Jr.; and Harting, Gary L., 3,940,339.

Hartmann, Eduard: *See—*
Hauser, Hans Ulrich; and Hartmann, Eduard, 3,940,465.

Harwood, Richard C., executor: *See—*
Davis, John Howard, deceased; Harwood, Richard C., executor; and Davis, Barbara, executrix, 3,940,464.

Hashimoto, Junji: *See—*
Yoshitomi, Hirohiko; Hashimoto, Junji; Kodama, Taro; and Hirose, Fujiharu, 3,939,681.

Hauck, Sylvester J.: *See—*
Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stanley C.; Margerum, Bruce A.; and Jarvi, Antti, 3,939,996.

Haug, Merrill W. Modular construction element. 3,940,100, Cl. 248-188.100.

Haulter, Earl M. Carrying device for a doll and a cradle. 3,940,040, Cl. 224-5.00R.

Haun, Marion W.; Mos, Robert J.; and Riley, Arthur W., to American Magnetics Corporation. Card readout apparatus. 3,940,796, Cl. 360-109.000.

Hauser, Hans Ulrich; and Hartmann, Eduard, to Bucher-Guyer AG, Maschinenfabrik. Method for regulating the hardening time of a plastic mass in the mold of an injection molding machine. 3,940,465, Cl. 264-40.000.

Havera Development Ltd.: *See—*
Teisen, Mogens Roesdahl Groth, 3,939,717.

Hawkins, Ronald G., to Aluminum Company of America. Frameless spacer with viscoelastic damping means. 3,940,553, Cl. 174-42.000.

Hayes, John C., to Universal Oil Products Company. Hydrocarbon conversion with an acidic multimetallic catalytic composite. 3,940,190, Cl. 208-137.000.

Hayes, Larry J.: *See—*
Dixon, Dale D.; and Hayes, Larry J., 3,940,520.

Hayes, Robert R., to Cole National Corporation. Wristband connector with integral pins. 3,939,534, Cl. 24-265.00B.

Healy, James W.; and Lautzenhiser, Argyle G., to DASA Corporation. Manually actuable repertory dialer. 3,940,573, Cl. 179-90.0BB.

Hearty, Patrick F.: *See—*
Stallabrass, James R.; Ringer, T. Rayman; Bailey, Donald L.; and Hearty, Patrick F., 3,940,622.

Heaslett, Alastair M., to Ampex Corporation. Equalization circuit. 3,940,709, Cl. 330-107.000.

Heavner, Larry W.: *See—*
Gidewall, Kenneth L.; and Heavner, Larry W., 3,939,624.

Heggie, William S., to Canadian Patents & Development Limited. Apparatus for measuring engine cylinder pressures. 3,939,703, Cl. 73-115.000.

Heidelbach, Charles A., to Fiat-Allis Construction Machinery, Inc. Quick-bonding adhesively attachable support pads for palletizing containers. 3,940,101, Cl. 248-346.000.

Heidkamp, Karl-Josef, to Otto Grossteinbeck GmbH. Installation for mounting a door panel or rosette on a door. 3,939,680, Cl. 70-452.000.

Heil, Herbert: *See—*
Heimke, Gunther; Griss, Peter; Von Andrian-Werburg, Hanns; Heil, Herbert; and Wachter, Paul, 3,939,497.

Heimke, Gunther; Griss, Peter; Von Andrian-Werburg, Hanns; Heil, Herbert; and Wachter, Paul, to Friedrichsfeld GmbH. Steinzeug-und Kunststoffwerke. Fastening means for hip joint prosthesis sockets. 3,939,497, Cl. 3-1.912.

Heinecke, Rudolf August Herbert, to ITT Industries, Inc. Selective plasma etching and deposition. 3,940,506, Cl. 427-38.000.

Heinemann, Otto; and Philipp, Rainer, to Polysius AG. Blade lifter for installation inside a revolving drum. 3,940,118, Cl. 259-89.000.

Heinemann, Otto: *See—*
Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Heinrich, Karl: *See—*
Franz, Gunther; Heinrich, Karl; and Poppe, Herbert, 3,939,637.

Heinze, Gunter; Muller, Willi; von Zimmerman, Hans Ulrich; and Schalomon, Karl-Heinz. Simplex intercommunication system and a two-way intercommunication system having an electronic trunking scheme. 3,940,561, Cl. 179-15.0AL.

Heinzman, Homer W.; and Marek, Albert J., to LTV Aerospace Corporation. Power controller. 3,940,684, Cl. 323-9.000.

Heitlinger, Louis J.: *See—*
Arneson, Harold N.; and Heitlinger, Louis J., 3,939,824.

Hekimian Laboratories, Inc.: *See—*
Hekimian, Norris C.; and Turner, James F., 3,940,703.

Hekimian, Norris C.; and Turner, James F., to Hekimian Laboratories, Inc. Intermodulation distortion analyzer. 3,940,703, Cl. 328-144.000.

Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., to General Electric Company. Method of making discharge lamp having blow-molded arc tube ends. 3,939,538, Cl. 29-25.110.

Helm, Herbert W., to F. L. Smithe Machine Company, Inc. Drive for rotatable cutter mechanisms. 3,939,723, Cl. 74-401.000.

Helmer, Karin Ulla Elisabet; and Simonsson, Berit Ingegard, to Kemanord AB. Process for sizing cellulose fibres. 3,940,519, Cl. 427-395.000.

Hempowitz, Gunter; and Pokar, Jochen, to Uranit, Uran-Isotopentrennungs-Gesellschaft m.b.H. Apparatus for measuring the proportion or quantity of a component in a radiation-transparent mixture. 3,940,623, Cl. 250-343.000.

Hengartner, Kurt: *See—*
Schnell, Claude R.; Hengartner, Kurt; and Gross, Heinz, 3,940,653.

Henning, Kurt: *See—*
Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Novel keto-ethers. 3,940,444, Cl. 260-594.000.

Henry, David W.: *See—*
Fujiwara, Allan N.; Acton, Edward M.; and Henry, David W., 3,940,383.

Henry, Michel; and Bottard, Gilles Jean Marcel. Apparatus for locating faults in a working storage. 3,940,601, Cl. 235-153.0AC.

Henry, Ormond L.; and Smith, Raymond P., to D & H Industries, Inc. Polishing device. 3,939,599, Cl. 32-59.000.

Hepford, Richard R.; and Roberts, Clifford J., Jr., to Scott Paper Company. Non-nested two-ply absorbent fibrous sheet material. 3,940,529, Cl. 428-178.000.

Herb, Eugen: *See—*
Brekle, Erich; Herb, Eugen; and Klingel, Hans, 3,939,566.

Herbener, Klaus; and Schmitt, Ewald, to Messer Griesheim GmbH. Cutting machine clamping device. 3,940,123, Cl. 266-23.00R.

Hercules Incorporated: *See—*
Zebree, David T., 3,939,772.

Hergenrother, William L., to Firestone Tire & Rubber Company, The. Modified molecular weight of polylactams. 3,940,372, Cl. 260-78.00L.

Herleth, Karl, to Uher Werke Munchen. Tape recorder, particularly cassette recorder. 3,940,792, Cl. 360-96.000.

Hermann, Gunther: *See—*
Frohberger, Paul-Ernst; Urbschat, Otto Ewald, deceased; and Hermann, Gunther, 3,940,488.

Hermes, Walter Ludwig; Berkowitz, Murray; and Lombaerde, Charles, to Curtiss-Wright Corporation. Mold for die-cast rotor housing for rotary combustion engines. 3,940,104, Cl. 249-142.000.

Hernandez, Ralph G. Tool for setting jointed flooring panels. 3,939,546, Cl. 29-278.000.

Hertz, Walter, to Siemens Aktiengesellschaft. Arc quenching arrangement. 3,940,583, Cl. 200-148.00A.

Hervier, Jean: *See—*
Palluel, Pierre; Hervier, Jean; and Rousseau, Jean, 3,940,655.

Hesler, Dietrich; Gresser, Gerhard; and Brandstetter, Helmut, to Karl M. Reich Maschinenfabrik GmbH. Workpiece feeding apparatus, especially for machining equipment. 3,939,611, Cl. 51-139.000.

Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, to Bayer Aktiengesellschaft. Moulding compositions based on unsaturated polyesters, copolymerisable vinyl monomers and cellulose esters. 3,940,350, Cl. 260-16.000.

Hess, Peter: *See—*
Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, 3,940,340.

Heymes, Rene: *See—*
Martel, Jacques; Heymes, Rene; and Lutz, Andre, 3,940,354.

Heytmeijer, Herman R.: *See—*
Demarest, Donald J.; and Heytmeijer, Herman R., 3,940,343.

Hi-Torr Inventions Corporation: *See—*
Brunstetter, Frank H., 3,939,827.

Hibino, Yoshihiro: *See—*
Kaneko, Yasuhisa; Komatsu, Yasuhiko; Hibino, Yoshihiro; and Okada, Yasuo, 3,939,897.

Hickman, John B.: *See—*
Dennis, Charles L.; Givens, Wyatt W.; and Hickman, John B., 3,940,610.

Hickson & Welch Limited: *See—*
Davidson, Hugh; Johnson, Keith Trevor; Leggeter, Brian Ernest; and Moore, Anthony John, 3,940,437.

Hidaka, Hideo; and Yamamoto, Setsuo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for regulating supply quantity of textile fibers to a weighing device. 3,939,929, Cl. 177-121.000.

Hiestand, Armin, to Ciba-Geigy Corporation. Perfluoroalkyl compounds. 3,940,435, Cl. 260-481.00R.

Hilaire, Fernand, to Captocap Limited. Apparatus for injection molding a tamper-proof plastic cap. 3,940,103, Cl. 249-68.000.

Hilti Aktiengesellschaft: *See—*
Oehry, Norbert, 3,940,587.
Oehry, Norbert; and Wild, Rainer, 3,940,588.

Hinckley, Thomas L., to Scott Paper Company. Apparatus for forming a nonwoven fibrous web. 3,940,216, Cl. 425-83.000.

Hinkle, Max E.: *See—*
Hall, Ervin T.; Talbert, Miles E.; Walsh, James R.; and Hinkle, Max E., 3,939,508.

Hinz, Henry; and Stopek, Benjamin, to Ideal Toy Corporation. Fold up die construction. 3,940,142, Cl. 273-146.000.

Hirao, Seiji, to Chisso Corporation. Radiation-sterilized shaped articles of olefin polymers. 3,940,325, Cl. 204-159.200.

Hiratsuka, Yoshitaka: *See—*
Kurita, Shoichi; Sata, Naohide; Ogawa, Hideki; and Hiratsuka, Yoshitaka, 3,940,705.

Hiromori, Yasutaka: *See—*
Mizoguchi, Akira; Yamamori, Kiyoshi; and Hiromori, Yasutaka, 3,940,773.

Hirose, Fujiharu: *See—*
Yoshitomi, Hirohiko; Hashimoto, Junji; Kodama, Taro; and Hirose, Fujiharu, 3,939,681.

Hirose, Katsumi: *See—*
Maeda, Ryozo; and Hirose, Katsumi, 3,940,403.

Hirsch, William J. Portable fence. 3,940,113, Cl. 256-24.000.

Hitachi, Ltd.: *See—*
Horikoshi, Hisashi; and Kawabe, Shun, 3,940,741.
Sasayama, Takao, 3,939,811.
Tadokoro, Tomio; Kouno, Toshikatsu; and Sasaki, Akio, 3,940,680.
Tomioka, Shunzo; Okano, Kinpei; and Kajiwara, Toshiyuki, 3,940,191.
Tsuboi, Takashi; and Tanamachi, Tokunosuke, 3,940,669.

Hjelm, Michael J.: *See—*
Whittum, Howard A.; and Hjelm, Michael J., 3,940,549.

Hochman, Arthur, to Art-Phyl Creations. Hook display assembly. 3,939,985, Cl. 211-57.000.

Hockaday, Robert C. Lettering guide apparatus. 3,939,588, Cl. 40-125.00A.

Hoechst Aktiengesellschaft: *See—*
Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, 3,940,340.
Franz, Gunther; Heinrich, Karl; and Poppe, Herbert, 3,939,637.
Frey, Hans-Helmut; and Klug, Helmut, 3,940,456.
Grossmann, Hans-Hermann; Burg, Karlheinz; and Sextro, Gunter, 3,940,365.
Strassberger, Werner, 3,940,452.

Hoenig, Gerhard E.: *See—*
Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., 3,939,559.

Hoffmann, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. N-(N,N-disubstituted-aminomethylidene)-(thiono)thiol-phosphoric acid esters amides. 3,940,457, Cl. 260-943.000.

Hoffmann, Herbert: *See—*
Bruckert, Klaus; Hoffmann, Herbert; Kutscher, Gerhard; Neubert, Rolf; and Wehling, Rolf, 3,939,638.

Hofstein, Steven R., to Princeton Electronics Products, Inc. Target structure for electronic storage tubes of the coplanar grid type having a grid structure of at least one pedestal mounted layer. 3,940,651, Cl. 313-391.000.

Hogg, Walter R., to Coulter Electronics, Inc. Particle analyzer of the coulter type including coincidence error correction circuitry. 3,940,691, Cl. 324-71.0CP.

Hohne, Karl; and Mund, Konrad, to Siemens Aktiengesellschaft. Process for the manufacture of silver-coated tungsten carbide electrode material. 3,940,510, Cl. 427-115.000.

Hoi, Buu: *See—*
Saint-Ruf, Germain; Chanh, Pham Huu; and Hoi, Buu, 3,940,387.

Holly, Harry H., to Hollymatic Corporation. Molding apparatus. 3,939,530, Cl. 17-32.000.

Holly, James A., to Hollymatic Corporation. Molding device. 3,939,531, Cl. 17-32.000.

Hollymatic Corporation: *See—*
Holly, Harry H., 3,939,530.
Holly, James A., 3,939,531.

Holt, William C., Jr.: *See—*
Youtsey, Karl J.; and Holt, William C., Jr., 3,940,509.

Holzer, Anton, to Wien-Fischamender Metallwarenfabrik Josef Suschny & Sohne. Dowel. 3,939,974, Cl. 206-343.000.

Holzrichter, Herbert: *See—*
DeFago, Raymond; Angliker, Hans-Joerg; Holzrichter, Herbert; Kneubuehler, Werner; and Peter, Richard, 3,940,246.

Honeywell Inc.: *See—*
Bockett-Pugh, Charles Paul, 3,940,704.
Greer, Homer L.; and Newbold, William F., 3,939,708.
Tanaka, Kozo; and Onoda, Tetsuyuki, 3,940,686.

Honeywell Information Systems, Inc.: *See—*
Conroy, Walter J.; Prescott, Robert S.; and Proulx, George G., 3,940,790.

Hongu, Masayuki: *See—*
Sumi, Takao; and Hongu, Masayuki, 3,940,708.

Hooker Chemicals & Plastics Corporation: *See—*
Cook, Edward H., Jr., 3,940,323.

Hoppe, Peter; Drouven, Gustav; Leyer, Helmut; and Muller, Johann, to Bayer Aktiengesellschaft. Article comprising foam plastic covered with an outer surface strengthening layer. 3,940,524, Cl. 428-86.000.

Horbach, Alfred: *See—*
Pelousek, Herbert; Horbach, Alfred; Bottenbruch, Ludwig; and Binsack, Rudolf, 3,940,367.

Hori, Kiyokazu: *See—*
Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, 3,939,634.

Hori, Michimasa; and Aizawa, Takeshi, to Matsushita Electric Industrial Co., Ltd. Blower. 3,940,215, Cl. 415-54.000.

Horikawa, Masao, to Terasaki Denki Sangyo Kabushiki Kaisha. Instantaneously tripping device for circuit interrupter. 3,940,723, Cl. 335-174.000.

Horikoshi, Hisashi; and Kawabe, Shun, to Hitachi, Ltd. Information processing device for processing instructions including branch instructions. 3,940,741, Cl. 340-172.500.

Horinouchi, Tsukasa; Egawa, Setsuya; and Sakamoto, Masahiro, to NCR Corporation. Pressure-sensitive recording sheet. 3,940,539, Cl. 428-323.000.

Horn, Mortimer J.: *See—*
Jackel, Simon S.; and Horn, Mortimer J., 3,940,504.

Horowitz, Carl; Pinczuk, Leon; and Dichter, Michael, to Polymer Research Corporation of America. Method of activating polymers. 3,940,377, Cl. 260-79.5NV.

Hortig, Wilhelm, to KM Engineering AG. Mechanism for centering metal hollow bodies during a drawing operation. 3,939,685, Cl. 72-361.000.

Horvath, Eduard, to Otto Bock Orthopaedische Industrie KG. Epicyclic transmission with eccentric drive and thrust-transmitting bodies in stationary guide. 3,939,737, Cl. 74-805.000.

Horvath, Robert A., to General Motors Corporation. Power brake booster. 3,939,658, Cl. 60-548.000.

Horvath, William, to Thiokol Corporation. Rechargeable sprayer with improved valve system and charge cycle limit stop therefor. 3,940,029, Cl. 222-340.000.

Hosokawa, Teruo: *See—*
Abe, Haruo; Konishi, Masaichiro; and Hosokawa, Teruo, 3,940,788.

Hotte, Friedhelm: *See—*
Kuss, Eduard; and Hotte, Friedhelm, 3,939,690.

Houd, Rolf Dietrich, to F. L. Smidth & Co. Rotary kiln plant. 3,940,241, Cl. 432-106.000.

Hounsfield, Godfrey Newbold; Beaven, Paul Anthony; and Lill, Brian Herbert, to E M I Limited. Data processing arrangements. 3,940,599, Cl. 235-151.300.

Hounsfield, Godfrey Newbold, to E M I Limited. Apparatus for examining objects by means of penetrating radiation. 3,940,625, Cl. 250-360.000.

Hounsfield, Godfrey Newbold, to E M I Limited. Detection of radiation in radiographic apparatus. 3,940,626, Cl. 250-366.000.

Houston, John M.; Young, James R.; and Whetten, Nathan R., to General Electric Company. Electrostatic recording of X-ray images. 3,940,620, Cl. 250-315.00A.

Howard, Dean D.: *See—*
Cross, David C.; and Howard, Dean D., 3,940,766.

Howland, Bradford: *See—*
Kissinger, Curtis D.; and Howland, Bradford, 3,940,608.

Hoy, Edgar F., to Dow Chemical Company, The. Formaldehyde-diaromatic ether reaction products. 3,940,448, Cl. 260-609.00F.

Huberli, Wilhelm, to Zeiler A.G. Werk Koniz. Folded carton having dispensing means. 3,940,035, Cl. 222-528.000.

Hubers, Cornelis. Device comprising an expansion engine and a separate apparatus for feeding said engine. 3,939,652, Cl. 60-39.630.

Hudson, John A.; and Yelverton, Mitchell J., to United States of America, Navy. Buoyant electrode and system for high speed towing. 3,940,732, Cl. 340-4.00E.

Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., to Medical Monitor Systems, Inc. Data acquisition, storage and display system. 3,940,742, Cl. 340-172.500.

Hughes Aircraft Company: *See—*
DeLano, Richard H.; Mathews, Warren E.; Armi, Edgar L.; and Cochran, Keith W., 3,940,767.
Ethington, David A.; Wilmot, Richard D.; and Yamashiro, Herbert Y., 3,940,762.
Harrington, John B., 3,940,720.
Withrington, Roger J., 3,940,204.

Hughes, Richard Swart, to United States of America, Navy. Stimulated Brillouin scattered (SBS) tuned laser. 3,940,713, Cl. 331-94.50C.

Hughes, Robert D.: *See—*
Steigelmann, Edward F.; Hughes, Robert D.; and Gabor, Joseph, 3,940,469.

Huiber, Otto A.: *See—*
Misch, Dieter R.; and Huiber, Otto A., 3,939,688.

Hull, Francis R. Marine pump-jet propulsion system. 3,939,794, Cl. 115-16.000.

Hull, Henry E.: *See—*
Gallagher, Nicholas D.; Johnston, Herbert N.; Valihura, Robert J.; and Hull, Henry E., 3,939,676.

Hunt, Glenn E.: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 3,940,742.

Hunt, Ronald Eugene; and Jenkins, William Melchior, to International Business Machines Corporation. Modular disc eject apparatus for use as an output hopper and cartridge holder in dictation and transcription systems. 3,940,147, Cl. 274-9.00B.

Hunter, Edwin J., to Toro Company, The. Pop-up sprinkler head having flow adjustment means. 3,940,066, Cl. 239-204.000.

Huskins, Chester W.; and Patrick, Roy E., to United States of America, Army. Generation of hydrogen. 3,940,474, Cl. 423-648.000.

Hustede, Helmut; Rudy, Herman, deceased; by Rudy nee Ringelmann, Liselotte, heir; by Rudy, Hans, heir; and by Sallewsky nee Rudy, Barbara, heir, to Joh. A. Benckiser GmbH. Production of citric acid by submerged fermentation. 3,940,315, Cl. 195-36.00R.

Hutchinson, William M., to Phillips Petroleum Company. Azeotrope of 1,2-dichloro-1,1,2-trifluoroethane and trichlorofluoromethane. 3,940,342, Cl. 252-171.000.

Hutson, Clifford L.; and Miller, Leonidas C., to Hutson, Clifford L. Vacuum-actuated pick-up instrument. 3,940,172, Cl. 294-64.00R.

Hutton, John R., to Columbia Machine, Inc. Apparatus for manufacturing rough faced bricks. 3,940,229, Cl. 425-436.00R.

Hwa, Stephen C. P., to Xerox Corporation. Blade cleaning of surfaces with reverse movement. 3,940,282, Cl. 134-6.000.

Hy-Gain Electronics Corporation: *See—*
Morgan, Eugene L., 3,940,697.

Hydril Company: *See—*
Mott, James D., 3,939,913.

ICI Australia Limited: *See—*
Bolza, Frederick, 3,940,297.

ICI United States Inc.: *See—*
Burns, Joseph P., 3,940,537.

Ideal Toy Corporation: *See—*
Hinz, Henry; and Stopek, Benjamin, 3,940,142.

Igawa, Keisuke: *See—*
Nakayama, Yuzaburo; Yamamoto, Akinori; Asahara, Tomohiko; Shimamura, Masaharu; Tsuda, Yoshizo; Igawa, Keisuke; and Okamoto, Mitsuhiro, 3,939,636.

Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; by Krasilnikova, Nonna Alexeevna, administrator; and by Cherchintsev, Alexandr Nikolaevich, administrator. Two-roll machine for rolling-out disc-type articles. 3,939,684, Cl. 72-86.000.

Iizuka, Kinji: *See—*
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 3,940,422.

Ikeda, Tetsuo: *See—*
Murakami, Katsuhiko; Ikeda, Tetsuo; Miebori, Zenjiro; Noguchi, Kunio; and Nakanishi, Kaoru, 3,939,928.

Iki, Shinichi; and Kosugi, Hideaki, to Nissan Motor Co., Ltd. Multiplex transmission system on-off signal. 3,940,567, Cl. 179-15.0BY.

Ikrath, Kurt: *See—*
Johnson, Ronald F.; and Ikrath, Kurt, 3,940,733.

Illinois Tool Works Inc.: *See—*
Andersen, Stephen Verner; and Swick, Edwin Grant, 3,940,198.
Koscik, Richard A., 3,939,752.
Neumayer, George Anton, 3,939,979.

Image Analysing Computers Limited: *See—*
Gardner, Gerald Marvin, 3,940,557.

Imanaga, Kojiro: *See—*
Saida, Youichi; Ito, Hajime; and Imanaga, Kojiro, 3,939,756.

Imanaka, Takuichi: *See—*
Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, 3,940,299.

Imperial Chemical Industries Limited: *See—*
Caunt, Anthony David, 3,940,345.
Connell, Anthony John; and Pinto, Alwyn, 3,940,428.
Davis, John Howard, deceased; Harwood, Richard C., executor; and Davis, Barbara, executrix, 3,940,464.
Doschko, Werner; and Pscheidl, Hans, 3,939,632.
Matthews, Kenneth Gerald; and Richardson, John, 3,940,302.
Steele, Daniel, 3,939,941.

Imperial-Eastman Corporation: *See—*
Kotsakis, Mike D., 3,939,739.

Imperiali, Franco, to Comitato Nazionale per l'Energia Nucleare. Electromagnetic safety device for the suspension of the rods in a nuclear reactor. 3,940,309, Cl. 176-22.000.

INA Seito Co., Ltd.: *See—*
Noritake, Muneo; and Takeuchi, Masaharu, 3,940,240.

Inaba, Hiroshi; and Yoneda, Etsugo, to Nippon Telegraph and Telephone Public Corporation. Digital code monitor system. 3,940,736, Cl. 340-146.10A.

Inamoto, Hiroshi: *See—*
Asakai, Masaru; and Inamoto, Hiroshi, 3,939,608.

Inca Inks, Inc.: *See—*
Goldfein, Harold A., 3,939,656.

Indak Manufacturing Corporation: *See—*
Schaad, William J., 3,940,585.

Industrias Rumbo, S.A.: *See—*
Fernandez, Rafael Herrera, 3,940,707.

Industrie Pirelli S.p.A.: *See—*
Priaroggia, Paolo Gazzana, 3,940,300.

Ing. C. Olivetti & C., S.p.A.: *See—*
Sajeva, Raoul, 3,940,745.
Vittorelli, Vittore, 3,940,746.

Inoue, Michihiro; Kimura, Takeji; and Sato, Masaharu, to Matsushita Electric Industrial Co., Ltd. Electronic organ. 3,939,750, Cl. 84-1.220.

Inoue, Naohiko, to Nissan Motor Co., Ltd. Automotive steering system. 3,939,938, Cl. 180-79.20R.

Inouye, Shigeharu: *See—*
Shomura, Takashi; Omoto, Shoji; Miyado, Shinji; Watanabe, Hiroshi; Inouye, Shigeharu; Yamada, Yujiro; and Niida, Taro, 3,940,479.

Inskeep, John B.: *See—*
Christini, Theodore P.; Flynn, William P.; Inskeep, John B.; and McCauley, Harry J., 3,940,512.

Institut Francaise du Petrole, des Carburants et Lubrifiants: *See—*
Castela, Andre; and Joubert, Philippe, 3,940,111.

Institut National de Recherche Chimique Appliquee: *See—*
Guichard, Jean-Claude; and Chauvelier, Claude, 3,939,694.

Institute of Gas Technology: *See—*
Meissner, Herman P.; and Schora, Frank C., 3,939,803.

Interlock Industries Limited: *See—*
Davis, Ronald Percival, 3,939,529.

International Business Machines Corporation: *See—*
Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, 3,939,579.
Brock, George W.; Shelledy, Frank B.; Smith, Sidney H.; and Thornley, Richard F. M., 3,940,797.
Griffiths, Donald E.; Koestner, Joseph H.; and Norton, David G., 3,940,794.
Hunt, Ronald Eugene; and Jenkins, William Melchior, 3,940,147.
Paddock, Richard Charles, 3,940,596.
Voegeli, Otto, 3,940,750.

International Flavors & Fragrances Inc.: *See—*
Pittet, Alan Owen; Klaiber, Erich Manfred; Vock, Manfred Hugo; Shuster, Edward J.; and Vinals, Joaquin, 3,940,499.

International Harvester Company: *See—*
Winker, Bernard L.; and Gaines, John W., 3,939,919.

International Nickel Company, Inc., The: *See—*
Lupton, David Francis; Mason, John Jefferson; and Penrice, Peter John, 3,940,295.

International Paper Company: *See—*
Baxter, Robert Olin, 3,939,995.

International Telephone and Telegraph Corporation: *See—*
Griffin, Richard H., 3,940,228.

Intreprinderea Flacara Rosie: *See—*
Cioca, Gheorghe; Tigaeru, Nicolae; Ionescu, Agrippa; Chiotan, Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, 3,939,831.

Inubuse, Akiyoshi: *See—*
Yamaguchi, Hideo; Kawasaki, Takashi; Takahashi, Shigeo; and Inubuse, Akiyoshi, 3,940,248.

Ionescu, Agrippa: *See—*
Cioca, Gheorghe; Tigaeru, Nicolae; Ionescu, Agrippa; Chiotan, Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, 3,939,831.

Iowa State University Research Foundation, Inc.: *See—*
Ellingson, William A.; and Read, Alvin A., 3,940,619.

Irion, Leonhard; and Kollmar, Walter, to Siemens Aktiengesellschaft. Nuclear reactor. 3,940,310, Cl. 176-36.00R.

Isaac, Kenneth N.: *See—*
Mock, Howard C.; Isaac, Kenneth N.; Disparte, Charles P.; Hall, Warren L.; and Beasely, James, 3,940,744.

Isaacs, Thelma J.; and Weinert, Robert W., to Westinghouse Electric Corporation. Acoustic surface wave devices using Tl_3TaS_4 and Tl_3TaSe_4 crystals. 3,940,717, Cl. 333-30.00R.

Ishiguro, Shoji: *See—*
Kawai, Masayoshi; Shishido, Tadao; Ishiguro, Shoji; and Sakai, Tadao, 3,940,271.

Ishikawa, Yasuo; and Ito, Masahiro, to Tokico Ltd. Spray-ejecting device. 3,940,072, Cl. 239-587.000.

Itatani, Hiroshi; Kashima, Mikito; Matsuda, Masaoki; Yoshimoto, Hataaki; and Yamamoto, Hiroyuki, to UBE Industries, Ltd. Process for producing biphenyltetracarboxylic dianhydrides. 3,940,426, Cl. 260-346.300.

Ito, Hajime: *See—*
Saida, Youichi; Ito, Hajime; and Imanaga, Kojiro, 3,939,756.

Ito, Hiroshi; and Yoshitsugu, Seikichi, to Nissan Motor Co., Ltd. Vehicle body construction. 3,940,176, Cl. 296-28.00F.

Ito, Masahiro: *See—*
Ishikawa, Yasuo; and Ito, Masahiro, 3,940,072.

Itoh, Takane; and Kamide, Takao, to Nissan Motor Co., Ltd. Operational circuitry for use in a gas turbine engine control system. 3,939,650, Cl. 60-39.28T.

Itoh, Yasuo, to Victor Company of Japan, Limited. Muting circuit. 3,940,698, Cl. 325-348.000.

ITT Industries, Inc.: *See—*
Heinecke, Rudolf August Herbert, 3,940,506.

Ives, Kenneth D.: *See—*
Gonos, Michael G.; Ives, Kenneth D.; and Vranka, Ronald S., 3,939,568.

Ivester, Andrew S., to Polaroid Corporation. Opaque shade. 3,940,774, Cl. 354-83.000.

Iwai, Yoshio: *See—*
Komatsu, Noboru; Obayashi, Mikio; Doi, Minoru; Ota, Nobuyoshi; and Iwai, Yoshio, 3,940,728.

IWEMA Forpacknings AB: *See—*
Stenberg, Folke Gustav Adolf, 3,940,305.

Izumi, Hiroshi: *See—*
Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.

J. I. Case Company: *See—*
Tucek, Frank J., 3,939,886.

J. Zink Co., Inc.: *See—*
Zink, Julius, 3,940,222.

Jablonsky, Erich, to Zahnradfabrik Friedrichshafen AG. Fluid power steering system with valve operator control means. 3,939,757, Cl. 91-391.00R.

Jackel, Simon S.; and Horn, Mortimer J., to Baker Research Development Service, Inc. Oleomargarine with yellow food coloring. 3,940,504, Cl. 426-540.000.

Jacob and Korves GmbH: *See—*
Richter, Ulf; and Korves, Antonius, 3,940,049.

Jacobs, William M.: *See—*
Rinker, James W.; and Jacobs, William M., 3,939,873.

Jager, Gerhard: *See—*
Singer, Rolf Jurgen; and Jager, Gerhard, 3,940,390.

Jallageas, Jean-Claude: *See—*
Commeyras, Auguste; Arnaud, Alain; Galzy, Pierre; and Jallageas, Jean-Claude, 3,940,316.

James, Donald R.: *See—*
Gunzel, Rudolph M., Jr.; James, Donald R.; and Radecki, Tony, 3,940,069.

Jamesbury Corporation: *See—*
Donnelly, James F., 3,939,864.

Jamison, Thomas H.: *See—*
Miller, Marshall W.; Vanden Broek, Christiaan J. H.; Stansbury, Benjamin H., Jr.; Jamison, Thomas H.; McHose, Charles W.; and Dubson, Paul T., 3,939,500.

Janssen, Eduard Jozef Philomena, to U.S. Philips Corporation. Electric incandescent lamp. 3,940,650, Cl. 313-222.000.

Jantsch, Ottomar; Feigt, Ingmar; and Willig, Wolf Rudiger, to Siemens Aktiengesellschaft. Strip type radiation detector and method of making same. 3,939,555, Cl. 29-577.000.

Janzen, Wolfgang, to Amsted-Siemagkette GmbH. Quick acting clamping device. 3,940,122, Cl. 269-23.000.

Japanese National Railways: *See—*
Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.

Jarema, Chester P.: *See—*
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Jarvi, Antti: *See—*
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Jasinski, Stanley C.: *See—*
Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stanley C.; Margerum, Bruce A.; and Jarvi, Antti, 3,939,996.

Jenkins, Dennis H.; and Palacio, Luis, to Space Research Corporation. Spin-stabilized projectiles. 3,939,773, Cl. 102-93.000.

Jenkins, Owen E. Golf game device. 3,940,143, Cl. 273-178.00R.

Jenkins, William Melchior: *See—*
Hunt, Ronald Eugene; and Jenkins, William Melchior, 3,940,147.

Jenny, Erwin F.: *See—*
Haas, Georges; Jenny, Erwin F.; and Rossi, Alberto, 3,940,434.

Jensen, Palle Rasmus: *See—*
Lund, Svend Aage; and Jensen, Palle Rasmus, 3,939,697.

Jeppsson, Martin Wilhelm Ivan; Lindstrom, Bruce William; and Russell, David John, to Telefonaktiebolaget L M Ericsson. Arrangement for preventing interruptions in a time division multiplex transmission link for transfer of data. 3,940,566, Cl. 179-15.0BF.

Jerrold Electronics Corporation: *See—*
Emgushov, Djangar, 3,940,699.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Kantrowitz, Arthur, 3,940,615.

Joh. A. Benckiser GmbH: *See—*
Hustede, Helmut; Rudy, Herman, deceased; Rudy nee Ringelmann, Liselotte, heir; Rudy, Hans, heir; and Sallewsky nee Rudy, Barbara, heir, 3,940,315.

Johannsmeier, Karl-Heinz, to Kasper Instruments, Inc. Step-and-repeat projection alignment and exposure system. 3,940,211, Cl. 355-53.000.

Johansson, Nils-Arne: *See—*
Lundvik, Bertil; and Johansson, Nils-Arne, 3,939,867.

John Zink Company: *See—*
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Johns-Manville Corporation: *See—*
Butterworth, Elbert Roy; and Duensing, Willard John, 3,940,498.
Mason, Richard Bell, 3,939,619.

Johnsen, Edward L. Multi-ply lottery tickets or like articles, continuous business form and method for producing same. 3,940,124, Cl. 270-61.00F.

Johnson, Charles E.: *See—*
Kaye, Michael D.; Rock, Kingsley Carlton, Jr.; Johnson, Charles E.; and Showalter, J. Philip, 3,939,823.

Johnson, Charles R., to Global Marine, Inc. Automatic roughneck. 3,939,990, Cl. 214-1.00P.

Johnson, David G.: *See—*
Woerman, Delwin G.; Johnson, David G.; and Murphy, Donald F., 3,939,916.

Johnson, Donald R.; and Sawers, James R., Jr., to Du Pont de Nemours, E. I., and Company. Method of joining diamond to metal. 3,940,050, Cl. 228-122.000.

Johnson, Herman W., to AMF Incorporated. Wrapper cutter for automatic cigar wrapping machine. 3,939,740, Cl. 83-24.000.

Johnson & Johnson: *See—*
Overhults, Wendell C., 3,940,362.
Tunc, Deger C., 3,939,836.

Johnson, Keith Trevor: *See—*
Davidson, Hugh; Johnson, Keith Trevor; Leggeter, Brian Ernest; and Moore, Anthony John, 3,940,437.

Johnson, Richard D. Extensible tape devices. 3,939,592, Cl. 43-15.000.

Johnson, Ronald F.; and Ikrath, Kurt, to United States of America, Army. Seismic surveillance system. 3,940,733, Cl. 340-15.000.

Johnson, Wade M., Jr., to Schlumberger Technology Corporation. Combined eddy current and leakage field detector for well bore piping using a unique magnetizer core structure. 3,940,689, Cl. 324-37.000.

Johnston, Herbert N.: *See—*
Gallagher, Nicholas D.; Johnston, Herbert N.; Valihura, Robert J.; and Hull, Henry E., 3,939,676.

Johnston, Howard, to Dow Chemical Company, The. Certain pyrazinyloxyphenyl urea compound. 3,940,392, Cl. 260-250.0BN.

Johnstun, Dick E. Angular position measuring apparatus. 3,940,609, Cl. 250-231.0SE.

Jones, Allen Paul, Jr.: *See—*
Knopf, Robert John; Matthews, Virgil Edison; and Jones, Allen Paul, Jr., 3,940,542.

Jones, Terry H., to Clarke-Gravely Corporation. Portable surface cleaner. 3,939,527, Cl. 15-353.000.

Jones, Thomas Parry; and Wright, Basil Martin. Apparatus for detecting or measuring a constituent of a gas. 3,940,251, Cl. 23-254.00E.

Jones, Thornton K.: *See—*
Fox, Richard C.; and Jones, Thornton K., 3,940,233.

Joubert, Philippe: *See—*
Castela, Andre; and Joubert, Philippe, 3,940,111.

Juchmann, Heinz, to Licentia Patent-Verwaltungs-G.m.b.H. Mounting for locking disc shaped semiconductor element in a housing. 3,940,787, Cl. 357-75.000.

Jung, Anton Ladislaus; Lapczyna, Manfred; Mows, Peter; Schmidt-Burbach, Gerhard; and Strauss, Heinz, to Buderus'sche Eisenwerke. Trash compactor. 3,939,765, Cl. 100-100.000.

Jung, Rolf, to Krauss & Reichert Spezialmaschinenfabrik. Method and apparatus for automatically cutting fabrics and the like. 3,939,742, Cl. 83-56.000.

Junker, Bernhard T., to Monsanto Company. Wire extractor. 3,939,744, Cl. 83-118.000.

Junker, Bernhard T.: *See—*
Weeks, James E.; Runkle, Charles J.; Junker, Bernhard T.; and O'Connor, Gary E., 3,939,745.

Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; and Castillo, Adolfo, to Automated Building Components, Inc. Methods for fabricating wooden frames and the like. 3,939,548, Cl. 29-432.000.

Jurovsky, Albert Yakovlevich; Zelenko, Gennady Samuilovich; and Brodkin, Jury Markovich. Pneumatic differential pressure sensor. 3,939,712, Cl. 73-388.0BN.

Kabushiki Kaisha Ishida Koki Seisakusyo: *See—*
Murakami, Katsuhiko; Ikeda, Tetsuo; Miebori, Zenjiro; Noguchi, Kunio; and Nakanishi, Kaoru, 3,939,928.

Kabushiki Kaisha Komatsu Seisakasho: *See—*
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Kabushiki Kaisha Sega Enterprises: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Morozumi, Shinji, 3,939,642.
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
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Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, 3,939,634.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Komatsu, Noboru; Obayashi, Mikio; Doi, Minoru; Ota, Nobuyoshi; and Iwai, Yoshio, 3,940,728.

Kadyszewski, Ronald V.: *See—*
Petusky, Neil J.; and Kadyszewski, Ronald V., 3,940,127.

Kahn, Evelyn G. Filing system. 3,939,585, Cl. 40-23.00A.

Kahn, Leonard R. System for illuminating the display of a wrist watch. 3,939,640, Cl. 58-23.00R.

Kahn, Samuel, to Universal Oil Products Company. Dehydrogenation of alcohols. 3,940,446, Cl. 260-603.0HF.

Kain, Calvin L., to KRDC. Container for pressure dispensing of fluid. 3,940,026, Cl. 222-212.000.

Kajiwara, Toshiyuki: *See—*
Tomioka, Shunzo; Okano, Kinpei; and Kajiwara, Toshiyuki, 3,940,191.

Kalinin, Alexandr Ivanovich: *See—*
Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.

Kallrath, Gottfried: *See—*
Reinhardt, Helmut; Trebinger, Karl; and Kallrath, Gottfried, 3,940,252.

Kalman, Peter Gabor. Filtering process and apparatus. 3,940,335, Cl. 210-77.000.

Kalogerson, Thomas A.; and Dandois, Joseph E., to Optimizer Control Corporation. Brake controlled ignition retarder. 3,939,948, Cl. 192-3.00R.

Kamide, Takao: *See—*
Itoh, Takane; and Kamide, Takao, 3,939,650.

Kamijo, Tetsuhide: *See—*
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 3,940,422.

Kamioka, Hajime: *See—*
Takagi, Mikio; Kamioka, Hajime; Nakayama, Kazufumi; and Shimoda, Haruo, 3,940,288.

Kan, Takahiro: *See—*
Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, 3,940,299.

Kanatsu, Shinsaku; and Takahara, Akira, to Mitsui Toatsu Chemicals, Incorporated. Method for the production of a decorative gypsum board. 3,940,541, Cl. 428-342.000.

Kanbara, Shigeo; and Adaniya, Takeshi, to Nippon Kokan Kabushiki Kaisha. Magnetic force sealant for plating tank. 3,939,799, Cl. 118-620.000.

Kane, William S.; McCutchen, Hugh L.; and Cardwell, Paul H., to Deepsea Ventures, Inc. Direct recovery of metals from fluid anhydrous metal halides derived from marine nodule halidation. 3,940,470, Cl. 423-24.000.

Kaneko, Takashi: *See—*
Chimura, Kazuya; Kaneko, Takashi; Takashima, Shunichi; Kawashima, Masao; and Nakazono, Ryuichi, 3,940,543.

Kaneko, Yasuhisa; Komatsu, Yasuhiko; Hibino, Yoshihiro; and Okada, Yasuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method for producing heat-insulating casting. 3,939,897, Cl. 164-103.000.

Kantrowitz, Arthur, to Jersey Nuclear-Avco Isotopes, Inc. Wide angle isotope separator. 3,940,615, Cl. 250-284.000.

Kardos, Otto; Arcilesi, Donald A.; and Valayil, Silvester P., to M & T Chemicals Inc. Electrodeposition of copper. 3,940,320, Cl. 204-52.00R.

Kariya, Yoshihiro: *See—*
Oya, Takafumi; Kashiwagi, Yoshiyuki; and Kariya, Yoshihiro, 3,940,057.

Karl M. Reich Maschinenfabrik GmbH: *See—*
Hesler, Dietrich; Gresser, Gerhard; and Brandstetter, Helmut, 3,939,611.

Karlsson, Alf Hugo: *See—*
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Karsted, Philip: *See—*
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Kashima, Mikito: *See—*
Itatani, Hiroshi; Kashima, Mikito; Matsuda, Masaoki; Yoshimoto, Hataaki; and Yamamoto, Hiroyuki, 3,940,426.

Kashiwagi, Yoshiyuki: *See—*
Oya, Takafumi; Kashiwagi, Yoshiyuki; and Kariya, Yoshihiro, 3,940,057.

Kasiewicz, Stanley J.; and McIntyre, Earl Richard. Integrated circuit flasher. 3,940,657, Cl. 315-77.000.

Kasper Instruments, Inc.: *See—*
Johannsmeier, Karl-Heinz, 3,940,211.

Kato, Akinori; and Yamamura, Kenji, to Sumitomo Heavy Industries, Ltd. Treating waste water containing nitriles and cyanides. 3,940,332, Cl. 210-2.000.

Kato, Makoto; and Okino, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Light beam deflection system. 3,940,202, Cl. 350-3.500.

Kato, Takashi; Yoshizawa, Toshio; and Yamada, Yasuo, to Daiwa Boseki Kabushiki Kaisha; and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for handling a yarn end during a donning operation on a textile machine. 3,940,076, Cl. 242-18.00R.

Katsube, Takahiro: *See—*
Suzuki, Junichi; Matsuda, Toru; and Katsube, Takahiro, 3,939,610.

Katz, Friedrich D.; Fishman, Louis; and Levy, Milton. Method of isolation of lysozyme. 3,940,317, Cl. 195-66.00R.

Katzer, Ernst, to Knorr-Bremse GmbH. Centering device for rail brake magnets on vehicles. 3,940,185, Cl. 308-3.00R.

Kauffman, Ralph I., to Amchem Products, Inc. Method of eradicating woody plants. 3,940,260, Cl. 71-110.000.

Kaufman, Martin H., to United States of America, Navy. Hydrocarbon polymers. 3,940,455, Cl. 260-888.000.

Kaul, Pradeep: *See—*
Gabbard, Ova Gene; Kaul, Pradeep; and Hangen, Joaquin, 3,940,558.

Kawabata, Hidetoshi: *See—*
Tanaka, Susumu; Enoguchi, Yuji; and Kawabata, Hidetoshi, 3,939,801.

Kawabe, Shun: *See—*
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Kawahashi, Toshinori: *See—*
Nishida, Kazumori; Kawahashi, Toshinori; and Tanaka, Yoshimasa, 3,939,950.

Kawai, Kiyomitsu, to Naniwa Products Co., Ltd. Shell molding machine in which blown core can be ejected outside vise assembly. 3,939,899, Cl. 164-181.000.

Kawai, Masayoshi; Shishido, Tadao; Ishiguro, Shoji; and Sakai, Tadao, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 3,940,271, Cl. 96-4.000.

Kawakami, Hiroshi: *See—*
Tezuka, Toshiyata; Kawakami, Hiroshi; and Miura, Katsutoshi, 3,939,663.

Kawasaki Steel Corporation: *See—*
Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, 3,940,299.

Kawasaki, Takashi: *See—*
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Kawashima, Masao: *See—*
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Kayaba Industry Co., Ltd.: *See—*
Miyazawa, Tadashi, 3,940,334.

Kayan, Helmut L.; and Stahler, Alfred F., to Ampex Corporation. Magnetic tape transport. 3,940,791, Cl. 360-95.000.

Kaye, Michael D.; Rock, Kingsley Carlton, Jr.; Johnson, Charles E.; and Showalter, J. Philip, to United States of America, Health, Education and Welfare. Esophageal transducer. 3,939,823, Cl. 128-2.00S.

Kayex Corporation: *See—*
Cook, Richard L., 3,939,514.

Keck, Norman A. Speed control device. 3,940,042, Cl. 226-44.000.

Keigler, John Edward; and Muhlfelder, Ludwig, to RCA Corporation. Re-orientation of a spacecraft relative to its angular momentum vector. 3,940,096, Cl. 244-165.000.

Keller, Rudolf: *See—*
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Kellwood Company: *See—*
Engelbrecht, John W.; and Lockard, John C., 3,940,355.

Kemanord AB: *See—*
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Kendall Company, The: *See—*
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Kendrick, Gary R.: *See—*
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Kennedy, Michael W.: *See—*
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Keogh, Raymond J.: *See—*
Morino, Ronald; Tucker, William B.; and Keogh, Raymond J., 3,940,677.

Kernell, Samuel H. Spinning toy. 3,939,601, Cl. 46-47.000.

Kerrigan, William: *See—*
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Kerry, John C.: *See—*
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,940,484.

Kerst, Al F., to Monsanto Company. Substituted ethane diphosphonic acids and salts and esters thereof. 3,940,436, Cl. 260-502.500.

Ketchel, Donald F. Safety cabinet for bathtub faucets. 3,940,196, Cl. 312-237.000.

Keuper, John J.; Scardina, Virgil R.; and Wagner, Paul D., to Allis-Chalmers Corporation. Slot closure for dynamoelectric machine. 3,940,647, Cl. 310-214.000.

Kew, Incorporated: *See—*
Kratz, John E.; and Williams, Bruce W., 3,940,789.

Key Pharmaceuticals, Inc.: *See*—
Harris, Arthur M., 3,939,842.

Kheifets, Rafail Efimovich: *See*—
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Khomyakov, Alexandr Mikhailovich: *See*—
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Kikust, Daniel Petrovich: *See*—
Sika, Zigurd Karlovich; and Kikust, Daniel Petrovich, 3,940,643.

Kim, Dong H.: *See*—
Santilli, Arthur A.; and Kim, Dong H., 3,940,395.

Kimura, Takeji: *See*—
Inoue, Michihiro; Kimura, Takeji; and Sato, Masaharu, 3,939,750.

King, Clarence J., to Straits Steel & Wire Co. Nesting container. 3,939,980, Cl. 206-507.000.

King, Clarence J., to Straits Steel & Wire Co. Nesting basket. 3,939,981, Cl. 206-507.000.

King, Lewis C.: *See*—
Cherry, Charles C.; and King, Lewis C., 3,940,067.

King Nutronics Corporation: *See*—
Waldron, Bradley C., 3,939,687.

Kinney, Alfred W., to Phillips Petroleum Company. Feeding method and apparatus for containers. 3,940,014, Cl. 221-10.000.

Kinney, Thomas D.: *See*—
Pickett, John E. P.; Kinney, Thomas D.; and Winders, Gene M., 3,940,219.

Kinoshita, Kazuhisa: *See*—
Mimino, Tohru; Kinoshita, Kazuhisa; Shinoda, Takayuki; and Minegishi, Isao, 3,940,267.

Kinoshita, Yukihiko: *See*—
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 3,940,422.

Kissei Yakuhin Kogyo Kabushiki Kaisha: *See*—
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 3,940,422.

Kissinger, Curtis D.; and Howland, Bradford, to Mechanical Technology Incorporated. Fiber optic displacement measuring apparatus. 3,940,608, Cl. 250-227.000.

Kitagawa, Norishisa: *See*—
Kuo, Chang-Kiang; and Kitagawa, Norishisa, 3,940,747.

Kitazume, Akio: *See*—
Miyasaka, Tsutomu; and Kitazume, Akio, 3,939,647.

Kitterman, Lawrence Pete; and Rice, Howard Gene. Tray washing system. 3,939,854, Cl. 134-57.00R.

Kittl, Hans, to Sandoz Ltd., (Sandoz AG). Bisbenzonazoledicarbonitriles. 3,940,410, Cl. 260-307.00D.

Klaiber, Erich Manfred: *See*—
Pittet, Alan Owen; Klaiber, Erich Manfred; Vock, Manfred Hugo; Shuster, Edward J.; and Vinals, Joaquin, 3,940,499.

Klar, Erich, to Siemens Aktiengesellschaft. Shielded-emitter neutron detector. 3,940,627, Cl. 250-390.000.

Klein, Norman E., to Deering Milliken Research Corporation. Apparatus for dyeing and printing materials having improved means for support thereof. 3,939,675, Cl. 68-205.00R.

Kleinhans, Robert J.: *See*—
Bernett, Frank E.; and Kleinhans, Robert J., 3,940,358.

Klingel, Hans: *See*—
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Knights, Robert Edgar. Windscreen wipers. 3,939,524, Cl. 15-250.040.

Knodler, Diethelm; Kropfl, Hans; Rau, Peter; and Wittmann, Theodor, to Siemens Aktiengesellschaft. Nuclear reactor fuel element. 3,940,314, Cl. 176-78.000.

Knopf, Robert John; Matthews, Virgil Edison; and Jones, Allen Paul, Jr., to Union Carbide Corporation. Polyurethane hydrogel fibers and tapes and composites with natural and other synthetic fibers or films. 3,940,542, Cl. 428-364.000.

Knorr-Bremse GmbH: *See*—
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Koci, Jerry C., to Chicago Dynamic Industries, Inc. Control circuit for amusement device. 3,940,671, Cl. 318-349.000.

Kock, Ronald W., to Procter & Gamble Company, The. Loop knot tying method and apparatus. 3,940,169, Cl. 289-1.500.

Kockums Jernverksaktiebolag: *See*—
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Kodaira, Mitsuharu: *See*—
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Kojima, Suzuo; and Fujimaru, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Discharge device control circuit including a thyristor. 3,940,659, Cl. 315-241.00P.

Kojima, Yasuaki; Shinozaki, Takayoshi; and Takahashi, Akira, to Nippon Electric Company, Ltd. Cavity resonator having a variable resonant frequency. 3,940,721, Cl. 333-83.00R.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Amano, Kitsutaro; Sasaki, Hiroshi; and Maruyama, Tatsuo, 3,940,555.

Kolbe, William H.; and Unger, Donald C., to General Motors Corporation. Headlamp washer and wiper system. 3,939,523, Cl. 15-250.020.

Kollmar, Walter: *See*—
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Komar, administratrix, by Olga Efremova: *See*—
Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.

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Komatsu, Noboru; Obayashi, Mikio; Doi, Minoru; Ota, Nobuyoshi; and Iwai, Yoshio, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Nippondenso Co., Ltd. Alloy for a high temperature fuse. 3,940,728, Cl. 337-290.000.

Komatsu, Yasuhiko: *See*—
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Komer, administrator by Alexandr Eugenievich: *See*—
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Komine, Yoshio, to Canon Kabushiki Kaisha. Casing of a mechanical mounting for the interchangeable lenses and a camera system using the same. 3,940,777, Cl. 354-197.000.

Kondo, Hirosi. Dispenser device for taking out contents. 3,940,030, Cl. 222-384.000.

Kondo, Isao, to Olympus Optical Co., Ltd. Motor-drive controlling apparatus. 3,940,776, Cl. 354-173.000.

Kondo, Shinichi: *See*—
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Konishi, Masaichiro: *See*—
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Konzal, Daryl R.: *See*—
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Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, to Boehringer Ingelheim GmbH. Therapeutic compositions and method. 3,940,489, Cl. 424-309.000.

Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich. Method of rolling a continuously cast ingots. 3,939,896, Cl. 164-76.000.

Korves, Antonius: *See—*
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Koscik, Richard A., to Illinois Tool Works Inc. Fastener structure. 3,939,752, Cl. 85-5.00R.

Kose, Tatsuo: *See—*
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Kossoff, George, to Commonwealth of Australia, The. Scanning ultrasonic inspection method and apparatus. 3,939,696, Cl. 73-67.80S.

Kossoff, George, to Commonwealth of Australia, The. Measurement of liquid flow. 3,939,707, Cl. 73-194.00A.

Kostecki, Bohdan; and Kostecki, Eugene. Circular motion reciprocating engine. 3,939,808, Cl. 123-43.00R.

Kostecki, Eugene: *See—*
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Kosugi, Hideaki: *See—*
Iki, Shinichi; and Kosugi, Hideaki, 3,940,567.

Kotsakis, Mike D., to Imperial-Eastman Corporation. Adjustable ratchet wrench. 3,939,739, Cl. 81-91.00R.

Kouno, Toshikatsu: *See—*
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Koyama, Hiroshi, to Yamatake-Honeywell Company Ltd. Multi-input switching means. 3,940,678, Cl. 320-1.000.

Kozlik, Antonin: *See—*
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Kraftwerk Union Aktiengesellschaft: *See—*
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Krakauer, Merrill. Article vending apparatus with door interlock. 3,940,016, Cl. 221-129.000.

Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, to Bayer Aktiengesellschaft. 1-Ethyl-imidazoles. 3,940,413, Cl. 260-309.000.

Kramer, Wolfgang; Buchel, Karl Heinz; Frohberger, Paul-Ernst; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. 1-Phenoxy-[imidazolyl-(1)]-2-hydroxy-alkanes. 3,940,414, Cl. 260-309.000.

Kramer, Wolfgang: *See—*
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Krasilnikova, Nonna Alexeevna, administrator: *See—*
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Kratz, John E.; and Williams, Bruce W., to Kew, Incorporated. Multicolor display for the visual-aesthetic portrayal of electric signals. 3,940,789, Cl. 358-82.000.

Krause, Wolfgang; and Spanke, Friedhelm, to Veb Pentacon Dresden. Camera diaphragm drive apparatus. 3,940,781, Cl. 354-272.000.

Krauss & Reichert Spezialmaschinenfabrik: *See—*
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KRDC: *See—*
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Kreeft, John; Stanislaw, Peter; and Gulbrandsen, Rudolph G., to Morrison Machine Co. Apparatus for longitudinally compressing textile material. 3,939,537, Cl. 26-18.600.

Krenzer, John: *See—*
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Kress, Robert W.; and Stettler, Martin C., to Grumman Aerospace Corporation. Wing sweep control system. 3,940,094, Cl. 244-77.00D.

Krider, Edmund Philip, to United States of America, Navy. Photoelectric lightning detector apparatus. 3,940,607, Cl. 250-209.000.

Kronenberg, Hartmut, to VDO Adolf Schindling AG. Device to indicate need to service or inspect a motor vehicle. 3,940,735, Cl. 340-52.00D.

Kronseder, Hermann: *See—*
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Kropfl, Hans: *See—*
Knodler, Diethelm; Kropfl, Hans; Rau, Peter; and Wittmann, Theodor, 3,940,314.

Kross, Robert W.; Fiel, Larry D.; Crockett, Charles R.; Neely, George B.; and Benton, Louis J., to Leisure Products Corporation. Automatic mixed drink dispensing apparatus. 3,940,019, Cl. 222-30.000.

Kruczek, Chester R.: *See—*
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Krulik, Gerald A.; and Sable, Harvey J., to Addressograph Multigraph Corporation. Reproduction system utilizing ion modulator and dielectric imaging surface. 3,940,270, Cl. 96-1.400.

Krummenacher, Leo. Apparatus for pedicure. 3,939,825, Cl. 128-52.000.

Krutzner, Karl, Jr.: *See—*
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Kubicki, Eugene Joseph, Sr. Flat core for web windings. 3,940,081, Cl. 242-68.500.

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Kunz, Werner: *See—*
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Kuo, Chang-Kiang; and Kitagawa, Norishisa, to Texas Instruments Incorporated. High density, high speed random access read-write memory. 3,940,747, Cl. 340-173.0DR.

Kurita, Shoichi; Sata, Naohide; Ogawa, Hideki; and Hiratsuka, Yoshitaka, to Fujitsu Limited. Amplifying circuit for pulse signals. 3,940,705, Cl. 330-16.000.

Kuromoto, Yoshio; Kobori, Toshio; and Ohba, Masaru, to Minolta Camera Kabushiki Kaisha. Interchangeable finder type camera. 3,940,779, Cl. 354-224.000.

Kurs, Lia Menakhimovna: *See—*
Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Kurtz, Leonard D., to Sutures, Inc. Proteolytic enzymes as adjuncts to antibiotic prophylaxis of contaminated wounds. 3,940,478, Cl. 424-94.000.

Kurumada, Tomoyuki: *See—*
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Kushner, Benjamin: *See—*
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Kuss, Eduard; and Hotte, Friedhelm, to Kuss, Edward. Device for measuring friction and wear under surrounding high pressure. 3,939,690, Cl. 73-9.000.

Kuss, Edward: *See—*
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Kutscher, Gerhard: *See—*
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Labana, Santokh S.; Golovoy, Amos; and van Oene, Henk, to Ford Motor Company. Method of preparing homogeneous thermosetting powder paint composition. 3,940,453, Cl. 260-836.000.

Lackey, Marion D.: *See—*
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La Croix, Eric Arthur Stuart; and Mhasalker, Solomon Ezekiel, to Beecham Group Limited. Insecticide compositions comprising a carbamate and a methylenedioxyphenyl compound. 3,940,487, Cl. 424-282.000.

Lagnado, Isaac; and Whitehouse, Harper J., to United States of America, Navy. Signal processing imager array using charge transfer concepts. 3,940,602, Cl. 235-181.000.

Lahme, Norbert; and Sassmannshausen, Gunter, to Accumulatorenwerk Hoppecke. Reaction catalyst for the elimination of oxyhydrogen gas in lead-acid storage batteries. 3,940,348, Cl. 252-466.0PT.

Lamartina, Alfonso: *See—*
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Lamberti, Vincent; and Pease, Wilder F., to Lever Brothers Company. Novel 2-(alkylsulfinyl)ethyl sulfates and compositions employing same. 3,940,433, Cl. 260-458.000.

Lambiev, Adrian Kostov: *See—*
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La Montagne, Maurice P.: *See—*
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Lannert, Kent P., to Monsanto Company. Lactones. 3,940,424, Cl. 260-343.600.

Lapczyna, Manfred: *See—*
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LaPointe, Gabriel M., to Parker Manufacturing Company. Fastener driver with safety device. 3,940,044, Cl. 227-8.000.

Larsen, George H.: *See—*
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Larson, Robert C.: *See—*
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Larson, Roger R., to Pharmaco, Inc. Safety cap for medicament vial having puncturable seal. 3,940,003, Cl. 215-247.000.

La Russa, Joseph Anthony, to Farrand Optical Co., Inc. Image-forming apparatus. 3,940,203, Cl. 350-3.500.

Laski, Jozef; and Pacholski, Jan, to Centralne Biuro Techniczne Przemyslu Maszyn Wlokienniczych. Device for damping vibrations of the bobbin holder. 3,940,074, Cl. 242-18.0DD.

Lasley, Charles T.: *See—*
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Lasserre, Pierre: *See—*
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Lassiter, Marvin Stevens, Sr., to American Cyanamid Co. Spray nozzle for dispersing sand slurry. 3,940,071, Cl. 239-524.000.

Laub, Joseph L.; and Steinmeier, David W., II, to Unitek Corporation. Bonding apparatus utilizing pivotally mounted bonding arm. 3,940,047, Cl. 228-32.000.

Laufer, Louis: *See—*
Brenner, Mortimer Wilkes; and Laufer, Louis, 3,940,430.

Lautzenhiser, Argyle G.: *See—*
Healy, James W.; and Lautzenhiser, Argyle G., 3,940,573.

Lawrence, Jackson, to Cluett, Peabody & Co., Inc. Low friction pressure seal for fabric processing chamber. 3,939,576, Cl. 34-242.000.

Lawrence Peska Associates, Inc.: *See—*
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Craig, Jules M.; and Karsted, Philip, 3,940,778.
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Lawson-Hemphill, Inc.: *See—*
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Lawson, John B.; and Dangel, Stephen C., to Lawson-Hemphill, Inc. Machine for knitting cord-like structures. 3,939,671, Cl. 66-86.00R.

Layer, Robert W., to B. F. Goodrich Company, The. Naphthofuranylnaphthol stabilizers. 3,940,364, Cl. 260-45.80A.

Lazzari, Jean-Pierre; and Valet, Jean-Yves, to Commissariat a l'Energie Atomique; and Compagnie Internationale pour l'Informatique. Device for testing the magnetic properties of a magnetic material. 3,940,688, Cl. 324-34.00R.

Le Joint Francais: *See—*
Fournier, Jean, 3,940,152.

Lea, Freeman Roderick, to Santa Fe International Corporation. Crown block. 3,940,112, Cl. 254-190.00B.

Leahy, William Richard. Measuring and cutting machine. 3,940,084, Cl. 242-110.200.

Lecoeur, Georges; and Fontenille, Henri, to Bercher S.A. Publicite Generale. Decorative multilayer object. 3,940,523, Cl. 428-38.000.

Lee, Alan John Clive; and Ling, Robin Sydney Mackwood, to National Research Development Corporation. Endoprosthetic femoral head. 3,939,498, Cl. 3-1.913.

Lee, Alan John Clive: *See—*
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Lee, Kung-You, to Texaco Inc. Preparation and recovery of ethers. 3,940,450, Cl. 260-614.00A.

Lee, Thomas E.: *See—*
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Leezer, James R.: *See—*
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Leggeter, Brian Ernest: *See—*
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Leisure Products Corporation: *See—*
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LeMay, Dan B., to Tylan Corporation. Assembly and method of obtaining a controlled gas mixture. 3,939,858, Cl. 137-90.000.

Lemay, J. Jacques, to Minister of National Defence of Her Majesty's Canadian Government, The. Arc controlled discharge system. 3,940,710, Cl. 331-94.5PE.

Lemelson, Jerome H. Verification apparatus using a card scanning means. 3,940,795, Cl. 360-101.000.

Lemons, Thomas M., to Lighting Development Co. High intensity spotlight. 3,940,606, Cl. 240-41.00R.

Lenk, Erich, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Winding machine. 3,940,075, Cl. 242-18.0PW.

Leonard, Gordon Harris: *See—*
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Lerik Milovanovic, Olga: *See—*
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Le Roy, George. Smoking article. 3,939,848, Cl. 131-10.00R.

Leutwyler, Roy: *See—*
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Levan, Chau: *See—*
Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.

Leveque, Edward L. Spare tire mounting. 3,940,178, Cl. 296-37.200.

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Lamberti, Vincent; and Pease, Wilder F., 3,940,433.

Levinson, Harold N.; and Frank, Jan. Treatment and pre-treatment of dysmetric dyslexia by improving sequential scanning and ocular fixation abilities and therapeutic compounds. 3,940,485, Cl. 424-250.000.

Levy, Milton: *See—*
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Leyer, Helmut: *See—*
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Limekiller, Andrew Henry: *See—*
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Lindenberg, Klaus Wilhelm. Time domain speech recognition system. 3,940,565, Cl. 179-1.0SA.

Lindquist, Carl E., to Willcox & Gibbs, Inc. Sewing machine thread control. 3,940,089, Cl. 242-156.000.

Lindstrom, Bruce William: *See—*
Jeppsson, Martin Wilhelm Ivan; Lindstrom, Bruce William; and Russell, David John, 3,940,566.

Linecker, Josef. Swimming-pool structure. 3,939,504, Cl. 4-172.170.

Ling, Bernt; and Widell, Bjorn, to Allmanna Svenska Elektriska Aktiebolaget. Apparatus and method for the melt reduction of iron oxides. 3,940,551, Cl. 13-9.00R.

Ling, Robin Sydney Mackwood; and Lee, Alan John Clive, to National Research Development Corporation. Endoprosthetic bone joint. 3,939,496, Cl. 3-1.910.

Ling, Robin Sydney Mackwood: *See—*
Lee, Alan John Clive; and Ling, Robin Sydney Mackwood, 3,939,498.

Lingl Corporation: *See—*
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Lingl, Hans, Jr., to Lingl Corporation. Apparatus and method for brick blending. 3,939,993, Cl. 214-6.00A.

Lininger, Ronald L.: *See—*
Clark, Richard S.; Lininger, Ronald L.; and Reed, David W., 3,940,059.

Linke, Roland: *See—*
Gaeth, Rudolf; and Linke, Roland, 3,940,535.

Lipe Rollway Corporation: *See—*
Szenczy, George, 3,939,966.

List, Ferdinand: *See—*
Wulf, Horst-Dieter; List, Ferdinand; Wember, Kurt; and Wilke, Norbert, 3,940,431.

Little, James F., to Uniroyal Inc. Golf ball cover. 3,940,146, Cl. 273-235.00R.

Little, Julian R.: *See—*
Nudenberg, Walter; Hagen, Edward L.; Little, Julian R.; and Mao, Chung-Ling, 3,940,396.

Lockard, John C.: *See—*
Engelbrecht, John W.; and Lockard, John C., 3,940,355.

Lockett, Neal R. Sinker release means. 3,939,595, Cl. 43-43.120.

Loeb, William E.; and Spivack, Mark A., to Union Carbide Corporation. Support media with supported object. 3,940,530, Cl. 428-206.000.

Loftus, William F. Apparatus for and process of determining overstress in pipe piles. 3,939,570, Cl. 33-178.00E.

Logsdon, Hillard Glenn, to Aeronca, Inc. Adjustable air volume regulator for air-conditioning systems. 3,939,868, Cl. 137-517.000.

Lombaerde, Charles: *See—*
Hermes, Walter Ludwig; Berkowitz, Murray; and Lombaerde, Charles, 3,940,104.

Lonza Ltd.: *See—*
Schnell, Claude R.; Hengartner, Kurt; and Gross, Heinz, 3,940,653.

Loomba, Yogendra Singh: *See—*
Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, 3,940,083.

Lopatto, John S., III. Tennis service instructional device. 3,940,132, Cl. 273-29.00A.

Lorber, Leslie H., to Olcott, Bernard. Process for reproducing a full-color picture in two impressions. 3,939,769, Cl. 101-211.000.

L'Oreal: *See—*
Vanlerberghe, Guy; and Rosenbaum, Georges, 3,940,477.

Lossa, Ulrich, to Palitex Project Company GmbH. Spindle start control device for textile yarn processing machine having knotting mechanism. 3,939,633, Cl. 57-34.00R.

LTV Aerospace Corporation: *See—*
Heinzman, Homer W.; and Marek, Albert J., 3,940,684.

Luchinsky, Nikolai Nikolaevich: *See—*
Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich;

Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.

Ludeman, Clayton Potter: *See—*
Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, 3,939,579.

Lum, Jack G. S., to Sound Technology, Inc. Distortion measurement system. 3,940,715, Cl. 331-141.000.

Lummus Company, The: *See—*
Rothenbucher, Robert K., 3,939,906.

Lund, Svend Aage; and Jensen, Palle Rasmus, to Akademiet for de Tekniske Videnskaber, Svejsecentralen. Method and apparatus for ultrasonic examination. 3,939,697, Cl. 73-67.80S.

Lundvik, Bertil; and Johansson, Nils-Arne, to Stal-Refrigeration AB. Valve for compressors. 3,939,867, Cl. 137-514.000.

Lupton, David Francis; Mason, John Jefferson; and Penrice, Peter John, to International Nickel Company, Inc., The. Low expansion alloys. 3,940,295, Cl. 148-38.000.

Lutz, Andre: *See—*
Martel, Jacques; Heymes, Rene; and Lutz, Andre, 3,940,354.

Lyall, Robert, to Wilkinson Sword Ltd. Shaving equipment. 3,939,560, Cl. 30-34.200.

M & T Chemicals Inc.: *See—*
Kardos, Otto; Arcilesi, Donald A.; and Valayil, Silvester P., 3,940,320.

MacAnally, Richard B., to California Institute of Technology. Single emulsion phase and amplitude transparency. 3,940,274, Cl. 96-38.300.

Macevicz, Clement C.; and Million, Charles W., to Desalination Systems, Inc. Method for cleaning semipermeable membranes. 3,940,336, Cl. 210-81.000.

Machalitzky, Otto: *See—*
Buhl, Harro; Erdelitsch, Herbert; Machalitzky, Otto; and Seitter, Wolf, 3,940,579.

Maddox, Jim, Jr.; and Tate, Jack F., to Texaco Inc. Surfactant oil recovery process usable in high temperature formations containing water having high concentrations of polyvalent ions. 3,939,911, Cl. 166-274.000.

Mader, Karl Werner. Multi-purpose funnel. 3,939,884, Cl. 141-333.000.

Madler, Armin: *See—*
Rothert, Klaus-Dieter; Stilkenbaumer, Herbert; Fischer, Gudrun; Madler, Armin; and Ross, Ulrich, 3,939,710.

Maeda, Kenji: *See—*
Umezawa, Hamao; Maeda, Kenji; Kondo, Shinichi; and Umezawa, Sumio, 3,940,382.

Maeda, Ryozo; and Hirose, Katsumi, to Shionogi & Co., Ltd. Substituted acetic acid derivatives and production thereof. 3,940,403, Cl. 260-294.80G.

Magherini, Dino. Machine for manufacturing, in a continuous and automatic cycle, strings of lights for microlamps. 3,939,541, Cl. 29-203.00R.

Magna Mir, Inc.: *See—*
Portner, Robert; and Miller, Phillip, 3,940,209.

Magnetic Analysis Corporation: *See—*
Suhr, Peter J.; and Spierer, Edward D., 3,940,690.

Mahagnoul, Edward J.: *See—*
Fick, Herbert J.; and Mahagnoul, Edward J., 3,940,534.

Malikov, Konstantin Alexeevich: *See—*
Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.

Mania, Max Joachim; and Weidmann, Albrecht, to BASF Aktiengesellschaft. Cleaning device for flanged reels. 3,939,526, Cl. 15-306.00B.

Manz, August Frederick, to Union Carbide Corporation. Plural brush DC machine and commutator assembly. 3,940,644, Cl. 310-148.000.

Mao, Chung-Ling: *See—*
Nudenberg, Walter; Hagen, Edward L.; Little, Julian R.; and Mao, Chung-Ling, 3,940,396.

Marek, Albert J.: *See—*
Heinzman, Homer W.; and Marek, Albert J., 3,940,684.

Margerum, Bruce A.: *See—*
Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stanley C.; Margerum, Bruce A.; and Jarvi, Antti, 3,939,996.

Margolin, George D. Expandable keyboard for electronic pocket calculators and the like. 3,940,758, Cl. 340-337.000.

Marion Power Shovel Company, Inc.: *See—*
Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, 3,940,163.

Mark, Victor, to General Electric Company. Flame retardant polycarbonate composition. 3,940,366, Cl. 260-45.90R.

Marker, Hannes. Safety ski binding. 3,940,156, Cl. 280-11.35R.

Markovac, Anica: *See—*
Ash, Arthur B.; La Montagne, Maurice P.; and Markovac, Anica, 3,940,404.

Markowitz, Jack. Disposable blood collection and filtering device. 3,939,822, Cl. 128-2.00F.

Marotta, Nicholas G.: *See—*
Nappen, Bernard H.; Boettger, Richard M.; and Marotta, Nicholas G., 3,940,505.

Marquardt, Charles L.; and Giuliani, John F., to United States of America, Navy. Flash melting method for producing new impurity distributions in solids. 3,940,289, Cl. 148-1.500.

Marshall, John R.: *See—*
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,940,484.

Marshall, Robert Moore; and Dardoufas, Kimon Constantine, to Allied Chemical Corporation. Production of polyester yarn. 3,940,544, Cl. 428-378.000.

Martel, Jacques; Heymes, Rene; and Lutz, Andre, to Roussel-UCLAF. Cephalosporan compounds. 3,940,354, Cl. 260-243.00C.

Marterer, Karl, to Rudolf Brand, Firma. Dispenser for a bottle top. 3,940,027, Cl. 222-309.000.

Martin, Ernest J.; and Molitor, Arvid A., to Martin, Ernest J. Liquid aeration method and pump apparatus with stationary vanes and downward flow. 3,940,461, Cl. 261-91.000.

Martin, Jean; Ollier, Jean-Louis; and Petit, Paul, to Groupement pour les Activites Atomiques et Avancees "GAAA". Partly melting rotating helical ring assembly. 3,940,150, Cl. 277-22.000.

Martorano, Richard, to Rohm and Haas Company. Pigment dispersions and lacquers containing copolymer of isobornyl methacrylate. 3,940,353, Cl. 260-22.0CB.

Maruyama, Tatsuo: *See—*
Amano, Kitsutaro; Sasaki, Hiroshi; and Maruyama, Tatsuo, 3,940,555.

Maruzen Oil Co., Ltd.: *See—*
Yokogawa, Akira; Mitooka, Mitsuyuki; and Shima, Kenji, 3,940,344.

Marvin Glass & Associates: *See—*
Burke, Harry E.; and Meyer, Burton C., 3,939,602.
Meyer, Burton C.; Barlow, Gordon A.; and Breslow, Jeffrey D., 3,940,140.

Marzocco, Ralph L.: *See—*
Brockett, Bruce W.; Marzocco, Ralph L.; and Weaver, Fredrick D., 3,940,275.

Masengill, William W., Sr. Process of assembling furniture corner joints. 3,939,549, Cl. 29-432.000.

Maskulia, Evgeny Rozhdenevich: *See—*
Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Mason, John Jefferson: *See—*
Lupton, David Francis; Mason, John Jefferson; and Penrice, Peter John, 3,940,295.

Mason, Richard Bell, to Johns-Manville Corporation. Facing wall construction. 3,939,619, Cl. 52-509.000.

Massey-Ferguson-Perkins Limited: *See—*
Armstrong, Anthony Clubley, 3,939,933.

Masuda, Mitsuya, to Matsushita Electric Industrial Co., Ltd. Automatic frequency control device for television receiver. 3,940,554, Cl. 178-5.8AF.

Mathews, Warren E.: *See—*
DeLano, Richard H.; Mathews, Warren E.; Armi, Edgar L.; and Cochran, Keith W., 3,940,767.

Matoba, Isao: *See—*
Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, 3,940,299.

Matsko, Joseph J., to Westinghouse Electric Corporation. Multi-phase voltage sensing switching device. 3,940,664, Cl. 317-31.000.

Matsuda, Masaoki: *See—*
Itatani, Hiroshi; Kashima, Mikito; Matsuda, Masaoki; Yoshimoto, Hataaki; and Yamamoto, Hiroyuki, 3,940,426.

Matsuda, Toru: *See—*
Suzuki, Junichi; Matsuda, Toru; and Katsube, Takahiro, 3,939,610.

Matsui, Katsuaki: *See—*
Murayama, Keisuke; Toda, Toshimasa; Mori, Eiko; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, 3,940,401.

Matsumoto, Isao; and Umeda, Kenkichi, to Sony Corporation. Tape cassette with erasure prevention recesses at rear corners. 3,940,799, Cl. 360-132.000.

Matsumura, Ko: *See—*
Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, 3,940,299.

Matsumura, Yuji; and Mitsudomi, Hiroyuki, to Osaka Gas Kabushiki Kaisha. Flat flame burner. 3,940,242, Cl. 432-124.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hori, Michimasa; and Aizawa, Takeshi, 3,940,215.
Inoue, Michihiro; Kimura, Takeji; and Sato, Masaharu, 3,939,750.
Kato, Makoto; and Okino, Yoshihiro, 3,940,202.
Masuda, Mitsuya, 3,940,554.
Mizoguchi, Akira; Yamamori, Kiyoshi; and Hiromori, Yasutaka, 3,940,773.
Seki, Hideki, 3,940,665.
Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.

Matsushita, Tomiharu: *See—*
Nishihara, Masao; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; Yamasaki, Tatsuo; Nogushi, Masataka; and Nishioka, Kunihiko, 3,939,682.

Matsuura, Norio. Tube fastener. 3,939,535, Cl. 24-283.000.

Matthews, Hugh B., to Sperry Rand Corporation. Geothermal energy system fluid filter and control apparatus. 3,939,659, Cl. 60-641.000.

Matthews, Kenneth Gerald; and Richardson, John, to Imperial Chemical Industries Limited. Non-woven materials and a method of making them. 3,940,302, Cl. 156-167.000.

Matthews, Virgil Edison: *See—*
Knopf, Robert John; Matthews, Virgil Edison; and Jones, Allen Paul, Jr., 3,940,542.

Mauvernay, Roland-Yves: *See—*
Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.

Mavrovic, Ivo. Method of controlling urea system. 3,940,440, Cl. 260-555.00A.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Eibl, Hansjorg; and Nicksch, Alfar, 3,940,423.

Mayer, Fritz; Keller, Rudolf; and Kunz, Werner, to Ciba-Geigy Corporation. Dry process for the finishing of organic material. 3,940,515, Cl. 427-248.000.

Mayes, Frank E. Poultry trailer. 3,940,174, Cl. 296-3.000.

Mayworm, Robert G., to Tower Products, Inc. Pouch made of coextruded polymers. 3,939,972, Cl. 206-219.000.

Mazier, Georges; Geffriaud, Jean Paul; and Gouvenot, Daniel, to Solmarine S.A. Large diameter tubular piles and the bedding thereof. 3,939,664, Cl. 61-53.580.

McBride, Thomas, to ECK Miller Transportation Corporation. Flatbed side panel stake. 3,940,179, Cl. 296-43.000.

McCabe, Ralph P., to Chandler Evans Inc. Fuel control. 3,939,649, Cl. 60-39.28R.

McCain, David L., to Continental Oil Company. Methods and systems for hydraulically transporting solids. 3,940,184, Cl. 302-14.000.

McCarthy, John P.; Moyer, John; and Fischer, Leonard, to DCA Food Industries, Inc. Apparatus for forming a shaped comestible. 3,940,217, Cl. 425-98.000.

McCaskey, Harold O., Jr.: *See—*
Palazzolo, Salvatore E.; and McCaskey, Harold O., Jr., 3,940,538.

McCauley, Harry J.: *See—*
Christini, Theodore P.; Flynn, William P.; Inskeep, John B.; and McCauley, Harry J., 3,940,512.

McClements, Kenneth: *See—*
Alexander, Michael Richard; Duncan, Edward; McClements, Kenneth; and Spencer, John Roger, 3,940,600.

McCleskey, Hubert D. Apparatus for use in erection of tent or other shelter adjacent a vehicle. 3,940,099, Cl. 248-38.000.

McClurg, James E., to Streck Laboratories, Inc. Laboratory testing procedure. 3,940,249, Cl. 23-230.00R.

McConaghy, John S., Jr.; and Owsley, Dennis C., to Monsanto Company. Oxidation of unsaturated amines. 3,940,429, Cl. 260-465.900.

McCormack, Gerald M. Apparatus for manufacturing wooden trusses and the like. 3,939,764, Cl. 100-100.000.

McCormick, John P. Tensiometer with remote sensing unit. 3,939,699, Cl. 73-73.000.

McCrory, Rollin John; and Robinson, George Dennis, Jr., to Gilbert & Baker Manufacturing Company. Leak detection system and method. 3,940,020, Cl. 222-52.000.

McCutchen, Hugh L.: *See—*
Kane, William S.; McCutchen, Hugh L.; and Cardwell, Paul H., 3,940,470.

McDonnell Douglas Corporation: *See—*
Allan, Winford K., 3,939,741.
Bergonz, Francis H., 3,940,630.

McGinty, Clarence E. Barbecue rotisserie apparatus. 3,939,761, Cl. 99-421.00H.

McHose, Charles W.: *See—*
Miller, Marshall W.; Vanden Broek, Christiaan J. H.; Stansbury, Benjamin H., Jr.; Jamison, Thomas H.; McHose, Charles W.; and Dubson, Paul T., 3,939,500.

McHugh, Vincent Kenneth. Unitary container liner. 3,940,052, Cl. 229-14.0BE.

McIntire, John M.: *See—*
Dannelly, Clarence C.; and McIntire, John M., 3,940,261.

McIntyre, Earl Richard: *See—*
Kasiewicz, Stanley J.; and McIntyre, Earl Richard, 3,940,657.

McKendry, Lennon H.; and Bland, Walter P., to Dow Chemical Company, The. 4 (3H)-Oxobenzo-2,1,3-thiadiazine-2,2-dioxides. 3,940,389, Cl. 260-243.00R.

McMahon, Patrick J. Metal coated articles. 3,939,834, Cl. 128-272.000.

McMullen, Arthur G.; Ruscoe, Michael J. H.; Clegg, Maurice A.; and Prowse, Ronald L., to Sherritt Gordon Mines Limited. Nickel clad steel coinage blank. 3,940,254, Cl. 29-196.600.

McReynolds, Oliver B. Seismic explosive charge loader and anchor. 3,939,771, Cl. 102-21.800.

McSherry, Thomas, to Woodstream Corporation. Crab or fish trap. 3,939,597, Cl. 43-105.000.

Mechanical Technology Incorporated: *See—*
Kissinger, Curtis D.; and Howland, Bradford, 3,940,608.

Med-Pak Corporation: *See—*
Miller, John J., 3,939,832.

Medhurst, Cyril William, to British Aircraft Corporation Limited. Rotary measuring instruments using inch or metric scale. 3,939,797, Cl. 116-115.500.

Medical Monitor Systems, Inc.: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 3,940,742.

Medley, Harold C., to Shugart Associates. Character belt apparatus with replaceable slugs for line printer. 3,939,768, Cl. 101-111.000.

Medtronic, Inc.: *See—*
Smyth, Nicholas P. D., 3,939,843.

Meier, Werner; Schmidt, Rudolf; and Kraft, Martin, to Siemens Aktiengesellschaft. Drive circuit for a main contactor. 3,940,663, Cl. 317-23.000.

Meiji Seika Kaisha, Ltd.: *See—*
Shomura, Takashi; Omoto, Shoji; Miyado, Shinji; Watanabe, Hiroshi; Inouye, Shigeharu; Yamada, Yujiro; and Niida, Taro, 3,940,479.

Meiko, Incorporated: *See—*
Gunzel, Rudolph M., Jr.; James, Donald R.; and Radecki, Tony, 3,940,069.

Meiser, Werner: *See—*
Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, 3,940,413.

Meissner, Herman P.; and Schora, Frank C., to Institute of Gas Technology. High temperature boiler and method. 3,939,803, Cl. 122-31.00R.

Melnikov, Evgeny Valentinovich: *See—*
Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.

Melquist, Marlin R.: *See—*
Ware, Lyle A.; Sundelius, Dennis J.; and Melquist, Marlin R., 3,940,065.

Menzi, Ulrich, to Paillard S.A. Mechanism for selectively controlling at least two functions in a typewriter. 3,939,955, Cl. 197-17.000.

Mercier, Jean; Faille, Marc Della; and Bleiman, Claude, to Gerdec. Chlorinated siliceous materals as fillers and reactants. 3,940,546, Cl. 428-446.000.

Merlin Gerin: *See—*
Castelli, Cesar; and Vincent, Eugene, 3,940,582.

Mermelstein, Seymour, to Tyco Laboratories, Inc. Apparatus for capping containers. 3,939,627, Cl. 53-329.000.

Messer Griesheim GmbH: *See—*
Herbener, Klaus; and Schmitt, Ewald, 3,940,123.

Metrailer, Charles E. Form support for use in making arched ceiling. 3,940,105, Cl. 249-209.000.

Meyer, Albert, to D. H. Baldwin Company. Self-damping circuit. 3,940,635, Cl. 307-294.000.

Meyer, Burton C.; Barlow, Gordon A.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Vibratory board game apparatus. 3,940,140, Cl. 273-109.000.

Meyer, Burton C.: *See—*
Burke, Harry E.; and Meyer, Burton C., 3,939,602.

Mhasalker, Solomon Ezekiel: *See—*
La Croix, Eric Arthur Stuart; and Mhasalker, Solomon Ezekiel, 3,940,487.

Michaels, Fred G.: *See—*
Williams, Richard D.; and Michaels, Fred G., 3,940,580.

Michel, Eberhard, to Kraftwerk Union Aktiengesellschaft. Steam generator. 3,939,805, Cl. 122-32.000.

Micheron, Francois; and Bied-Charreton, Philippe, to Thomson-CSF. Storage-type electro-optical modulator. 3,940,201, Cl. 350-3.500.

Middelmann, Heinz: *See—*
Rehn, Karl-Heinz; and Middelmann, Heinz, 3,939,635.

Middleton, William Joseph, to Du Pont de Nemours, E. I., and Company. Tris(substituted amino) sulfonium salts. 3,940,402, Cl. 260-293.630.

Miebori, Zenjiro: *See—*
Murakami, Katsuhiko; Ikeda, Tetsuo; Miebori, Zenjiro; Noguchi, Kunio; and Nakanishi, Kaoru, 3,939,928.

Miers, Bruce W.; Olt, Arthur E., Jr.; Van Rossem, Richard; and Wait, John D., Jr., to Caterpillar Tractor Co. Vibration-isolated cab for tractors. 3,940,177, Cl. 296-35.00R.

Mikulec, Richard A. Workpiece transfer mechanism. 3,939,992, Cl. 214-1.0BB.

Mile High Equipment Company: *See—*
Verlinden, Jerry M.; Swinford, Gary D.; DeJaeger, Kyle L.; and Kennedy, Michael W., 3,940,116.

Miller, Albert J.: *See—*
Ward, Curtis E.; St. Clair, Maurice W.; De Pue, James M., Jr.; and Miller, Albert J., 3,940,656.

Miller, David C.; and Sutton, Clifton C., to Ethicon, Inc. Suture package. 3,939,969, Cl. 206-63.300.

Miller, Gladys D.: *See—*
Renk, Richard J.; and Boller, George F., 3,940,189.

Miller, John J., to Med-Pak Corporation. Liquid flow regulator and monitor for infusion system. 3,939,832, Cl. 128-214.00R.

Miller, John S., to Boeing Company, The. Dust free asphalt production method and apparatus. 3,940,120, Cl. 259-158.000.

Miller, Kenneth J.: *See—*
Zook, Donald G.; Miller, Kenneth J.; and Patton, Eugene K., 3,939,880.

Miller, Leonidas C.: *See—*
Hutson, Clifford L.; and Miller, Leonidas C., 3,940,172.
Miller, Marjorie A. Disposable pad. 3,939,502, Cl. 4-113.000.
Miller, Marshall W.; Vanden Broek, Christiaan J. H.; Stansbury, Benjamin H., Jr.; Jamison, Thomas H.; McHose, Charles W.; and Dubson, Paul T., to Thetford Corporation. Water closet. 3,939,500, Cl. 4-10.000.
Miller, Phillip: *See—*
Portner, Robert; and Miller, Phillip, 3,940,209.
Miller, William H., Jr., to United States of America, Energy Research and Development Administration. Variable percentage sampler. 3,939,714, Cl. 73-424.000.
Million, Charles W.: *See—*
Macevicz, Clement C.; and Million, Charles W., 3,940,336.
Mills, Walter D.: *See—*
Harrow, Geoffrey A.; Mills, Walter D.; Wilson, John L.; and Finlay, Ian C., 3,939,813.
Mimino, Tohru; Kinoshita, Kazuhisa; Shinoda, Takayuki; and Minegishi, Isao, to Nippon Kokan Kabushiki Kaisha. Austenitic heat resisting steel. 3,940,267, Cl. 75-128.00G.
Minardi, John E., to University of Dayton, The. Solar radiant energy collector. 3,939,819, Cl. 126-271.000.
Minegishi, Isao: *See—*
Mimino, Tohru; Kinoshita, Kazuhisa; Shinoda, Takayuki; and Minegishi, Isao, 3,940,267.
Mining Equipment Division of FMC Corporation: *See—*
Pyles, Harley G., 3,939,958.
Minister of National Defence of Her Majesty's Canadian Government, The: *See—*
Lemay, J. Jacques, 3,940,710.
Minnesota Mining and Manufacturing Company: *See—*
Bergstrom, Theodore R., 3,940,269.
Casey, James H., 3,940,048.
Minolta Camera Kabushiki Kaisha: *See—*
Abe, Haruo; Konishi, Masaichiro; and Hosokawa, Teruo, 3,940,788.
Kuromoto, Yoshio; Kobori, Toshio; and Ohba, Masaru, 3,940,779.
Tanaka, Susumu; Enoguchi, Yuji; and Kawabata, Hidetoshi, 3,939,801.
Misch, Dieter R.; and Huiber, Otto A., to Edge Saw Manufacturing Company. Volumetric calibration. 3,939,688, Cl. 73-3.000.
Mitani Shoji Kabushiki Kaisha: *See—*
Miyazawa, Kuniaki, 3,939,953.
Mitchell, William A.; and Thayer, Charles V., to Bryant Grinder Corporation. Oil-mist lubrication system. 3,939,944, Cl. 184-6.260.
Mitooka, Mitsuyuki: *See—*
Yokogawa, Akira; Mitooka, Mitsuyuki; and Shima, Kenji, 3,940,344.
Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsubishi Industries, Ltd.: *See—*
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Mitsubishi Rayon Co., Ltd.: *See—*
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Miyasaka, Tsutomu; and Kitazume, Akio, to Kabushiki Kaisha Suwa Seikosha. Structure of water-tight watch case. 3,939,647, Cl. 58-90.00R.
Miyazawa, Kuniaki, to Mitani Shoji Kabushiki Kaisha. Coin discriminating apparatus. 3,939,953, Cl. 194-100.00A.
Miyazawa, Tadashi, to Kayaba Industry Co., Ltd.; Mitsubishi Industries, Ltd.; and E. C. Chemical Industries Co., Ltd. Method for separating oil from water. 3,940,334, Cl. 210-21.000.
Mizoguchi, Akira; Yamamori, Kiyoshi; and Hiromori, Yasutaka, to Matsushita Electric Industrial Co., Ltd. Liquid droplet writing mechanism. 3,940,773, Cl. 346-140.00R.
Mizuno, Susumu, to Daido Seiko Kabushiki Kaisha. Water-cooled panel for arc furnace. 3,940,552, Cl. 13-35.000.
Moberg, James W., to Browning-Ferris Industries, Inc. Safety apparatus for service vehicle. 3,939,937, Cl. 180-77.00D.
Mobil Oil Corporation: *See—*
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Mock, Howard C.; Isaac, Kenneth N.; Disparte, Charles P.; Hall, Warren L.; and Beasely, James, to Xerox Corporation. Self contained program loading apparatus. 3,940,744, Cl. 340-172.500.
Mohnach, Michael G.; and Plisky, John J., to Anderson Company, The. Windshield wiper arm with water distribution means. 3,940,068, Cl. 239-284.00R.
Mohr, Robert N.; and Zlotoff, Howard J. Clasp for internal osseous fixation. 3,939,828, Cl. 128-92.00B.
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Molloy, Edward W., to General Motors Corporation. Roller bearing separator. 3,940,193, Cl. 308-218.000.
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Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.
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Monroy, Heliodoro. Process of recovering BHT values from mother liquors of the crystallization of BHT obtained by alkylating p-cresol with isobutylene. 3,940,451, Cl. 260-624.00A.
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Moran, Raymond D. Mobile trackway. 3,939,777, Cl. 104-137.000.
Morello, Bartolomeo. Steelmaking with inert gas blowing. 3,940,263, Cl. 75-60.000.
Morgan, Eugene L., to Hy-Gain Electronics Corporation. Multiple band scanning radio. 3,940,697, Cl. 325-333.000.
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Morin, Jean, to Regie Nationale des Usines Renault. Planet carrier for a planetary gear train. 3,939,736, Cl. 74-801.000.
Morino, Ronald; Tucker, William B.; and Keogh, Raymond J., to Photocircuits Division of Kollmorgen Corporation. Direct-current stepping motor drive system. 3,940,677, Cl. 318-685.000.
Morozov, Alexandr Fedorovich: *See—*
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Morozumi, Shinji, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece semiconductor intergrated circuit. 3,939,642, Cl. 58-23.00A.
Morris, Herman H. Balanced liquid level head pressure control systems. 3,939,668, Cl. 62-196.000.
Morris, Robert C.: *See—*
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Morton, Dale E., to Texas Instruments Incorporated. Optical thin film coater. 3,939,798, Cl. 118-7.000.
Morton, Kenneth O., to Cluett, Peabody & Co., Inc. Picking and transporting means for fabric sections and the like. 3,940,125, Cl. 271-10.000.
Morton-Norwich Products, Inc.: *See—*
Schwan, Thomas J., 3,940,400.

Mos, Robert J.: *See—*
Haun, Marion W.; Mos, Robert J.; and Riley, Arthur W., 3,940,796.

Mossinsohn, Igal. Vehicle for cleaning pavements. 3,939,528, Cl. 15-340.000.

Motoda, Kenro. Lifting apparatus. 3,940,110, Cl. 254-168.000.

Motorola, Inc.: *See—*
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Mott, James D., to Hydril Company. Method of using a subsurface safety valve. 3,939,913, Cl. 166-314.000.

Mount Hope Machinery Company: *See—*
Staples, Robert E., 3,940,043.

Mousel, C. K. Universal hydraulic lift attachment for tractors. 3,940,000, Cl. 214-766.000.

Mouzin, M. Gilbert: *See—*
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Mows, Peter: *See—*
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Moyer, John: *See—*
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Muchowski, Joseph M.; and Fried, John H., to Syntex (U.S.A.) Inc. β-Adrenergic blocking agents in the 1,2,3-thiadiazole series. 3,940,407, Cl. 260-302.00D.

Mueller, Wolfgang H.: *See—*
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Muhlfelder, Ludwig: *See—*
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Muirhead, Walter B. Condenser tube cleaning plug. 3,939,519, Cl. 15-104.06R.

Muller, Ernst; and Butz, Alois, to Bizerba-Werke, Wilhelm Kraut KG. Band saw. 3,939,749, Cl. 83-814.000.

Muller, Johann: *See—*
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Muller, Peter, to Cerberus AG. Detection of presence or absence of flames. 3,940,753, Cl. 340-227.00R.

Muller, Willi: *See—*
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Mumford, Ray H.: *See—*
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Murakami, Katsuhiko; Ikeda, Tetsuo; Miebori, Zenjiro; Noguchi, Kunio; and Nakanishi, Kaoru, to Kabushiki Kaisha Ishida Koki Seisakusyo. Weighing method and apparatus. 3,939,928, Cl. 177-25.000.

Muraki, Toshio; Miura, Yasuo; and Kodama, Hiroshi, to Toray Industries, Inc. Copolyamide of caprolactam. 3,940,373, Cl. 260-78.00L.

Muramoto, Komi. Double-type container for cooling beverage. 3,940,022, Cl. 222-130.000.

Murata Kikai Kabushiki Kaisha: *See—*
Ohashi, Kenji, 3,940,077.

Murata, Yoshihiro: *See—*
Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.

Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, to Sankyo Company Limited. Piperidine derivatives and their use as stabilizers. 3,940,363, Cl. 260-45.80N.

Murayama, Keisuke; Toda, Toshimasa; Mori, Eiko; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, to Sankyo Company Limited. 4,4-(O-phenylenedioxy)-2,2,6,6-tetramethyl piperidine. 3,940,401, Cl. 260-293.580.

Murphy, Donald F.: *See—*
Woerman, Delwin G.; Johnson, David G.; and Murphy, Donald F., 3,939,916.

Murphy, Robert; and Perusse, Norman J., to Wiremold Company, The. Method and apparatus for packaging insulated duct. 3,939,622, Cl. 53-24.000.

Murphy, Wesley T., to Vercon Products, Inc. Foundation assemblies for building structures. 3,939,618, Cl. 52-274.000.

Musgrave, Daniel D. Magazine emptying device. 3,939,590, Cl. 42-90.000.

Muskin Corporation: *See—*
Smith, Clarence G.; and Lightfoot, Richard O., 3,939,796.

Myers, Walter E.: *See—*
Eaton, John Littell, Jr.; Brill, Richard Henry; and Myers, Walter E., 3,939,760.

Nagamura, Fumitaka. Tonearm lineai drive apparatus. 3,940,149, Cl. 274-23.00A.

Nagano, Tadashi: *See—*
Fujinami, Nobuakira; and Nagano, Tadashi, 3,939,838.

Nagy, Louis L., to General Motors Corporation. High frequency, short pulse, band limited radar pulse generator for ultrashort range radar systems. 3,940,696, Cl. 325-141.000.

Naito, Michikatsu: *See—*
Yamamoto, Yasuhiro; and Naito, Michikatsu, 3,939,856.

Nakanishi, Kaoru: *See—*
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Nakano, George S.; and O'Mera, Robert J. Driver training aid. 3,939,580, Cl. 35-11.000.

Nakayama, Kazufumi: *See—*
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Nakayama, Yuzaburo; Yamamoto, Akinori; Asahara, Tomohiko; Shimamura, Masaharu; Tsuda, Yoshizo; Igawa, Keisuke; and Okamoto, Mitsuhiro, to Toray Industries, Inc. Mixed yarn. 3,939,636, Cl. 57-140.0BY.

Nakazono, Ryuichi: *See—*
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Nalco Chemical Company: *See—*
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Naniwa Products Co., Ltd.: *See—*
Kawai, Kiyomitsu, 3,939,899.

Napier, Roger P.: *See—*
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Nappen, Bernard H.; Boettger, Richard M.; and Marotta, Nicholas G., to National Starch and Chemical Corporation. Process for drying foodstuffs. 3,940,505, Cl. 426-640.000.

NASGLO International Corporation: *See—*
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National Distillers and Chemical Corporation: *See—*
Tenney, Kenneth S.; and Tomo, Daniel, 3,939,967.

National Research Development Corporation: *See—*
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Ling, Robin Sydney Mackwood; and Lee, Alan John Clive, 3,939,496.

National Starch and Chemical Corporation: *See—*
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Nazworth, Harold W. Portable emergency safety shower. 3,939,503, Cl. 4-145.000.

NCR Corporation: *See—*
Brockett, Bruce W.; Marzocco, Ralph L.; and Weaver, Fredrick D., 3,940,275.
Horinouchi, Tsukasa; Egawa, Setsuya; and Sakamoto, Masahiro, 3,940,539.

Neathery, John L., Jr.: *See—*
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Neeb, Robert P.; Patrick, Henry W.; and Mumford, Ray H., to Diazit Company, Inc. Diazotype developing apparatus with liquid metering assembly. 3,940,782, Cl. 354-318.000.

Needham, Donald G.; and Griffin, Ray D., to Phillips Petroleum Company. Adhesive polyolefin composition. 3,940,547, Cl. 428-463.000.

Neely, George B.: *See—*
Kross, Robert W.; Fiel, Larry D.; Crockett, Charles R.; Neely, George B.; and Benton, Louis J., 3,940,019.

Neff, Gregor N. Insect feeding. 3,939,802, Cl. 119-51.00R.

Neilson, James McEwan McIntyre, to University of Edinburgh, The, a part interest. Apparatus for monitoring recurrent waveforms. 3,940,692, Cl. 324-77.00R.

Nelson, Merritt J., to Zin-Plas Corporation. Diverter spout valve mechanism. 3,939,865, Cl. 137-467.000.

Neubert, Rolf: *See—*
Bruckert, Klaus; Hoffmann, Herbert; Kutscher, Gerhard; Neubert, Rolf; and Wehling, Rolf, 3,939,638.

Neumayer, George Anton, to Illinois Tool Works Inc. Display container. 3,939,979, Cl. 206-461.000.

New Product Development Corporation: *See—*
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New York Wire Mills Corporation: *See—*
Tolliver, Wilbur E.; and Borodin, Daniel J., 3,939,879.

Newbold, William F.: *See—*
Greer, Homer L.; and Newbold, William F., 3,939,708.

Newell, Robert Keith, to Pettibone Corporation. Bearing housing adaptable to reworked shaft by reversal. 3,940,188, Cl. 308-15.000.

Newhouse, Vernon L.: *See—*
Cooper, George R.; and Newhouse, Vernon L., 3,940,731.

Ney, Karl Heinz: *See—*
Freytag, Wolfram Gustav; Ney, Karl Heinz; and Wirotama, I. Poetoe Gde, 3,940,501.

Nibco Inc.: *See—*
Edwards, Robert B., 3,940,108.

Nichol, Kenneth J.: *See—*
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,940,484.

Nichols, Amon. Pipe cutting mechanism. 3,939,561, Cl. 30-107.000.

Nichols, Dennis R.: *See—*
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Nichols, William V., Jr.: *See—*
Gonzalez, Juan M.; and Nichols, William V., Jr., 3,940,237.

Nicholson, Alfred William. Improvements relating to the repair of tires. 3,940,463, Cl. 264-36.000.

Nickols, Richard C., Jr.; and Trocciola, John C., to United Technologies Corporation. Corrosion protection for a fuel cell coolant system. 3,940,285, Cl. 136-86.00R.

Nicksch, Alfar: *See—*
Eibl, Hansjorg; and Nicksch, Alfar, 3,940,423.

Niculescu, Gheorghe: *See*—
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Niebylski, Leonard M.; Jarema, Chester P.; and Lee, Thomas E., to Ethyl Corporation. Reinforced foamed metal. 3,940,262, Cl. 75-20.00F.
Nielson, Edsel J., to United States of America, Air Force. Forklift hand truck. 3,939,999, Cl. 214-370.000.
Niida, Taro: *See*—
Shomura, Takashi; Omoto, Shoji; Miyado, Shinji; Watanabe, Hiroshi; Inouye, Shigeharu; Yamada, Yujiro; and Niida, Taro, 3,940,479.
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Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
Nilsson, Sven Walter, to SKF Industrial Trading and Development Company, B.V. Adjustable ball groove slide. 3,940,186, Cl. 308-6.00C.
Nippon Electric Company, Ltd.: *See*—
Kojima, Yasuaki; Shinozaki, Takayoshi; and Takahashi, Akira, 3,940,721.
Shutoh, Masamichi, 3,940,755.
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Nippon Kogaku K. K.: *See*—
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Nippon Kokan Kabushiki Kaisha: *See*—
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Nippon Telegraph and Telephone Public Corporation: *See*—
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Nippon Zlin Co. Ltd.: *See*—
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Nippondenso Co., Ltd.: *See*—
Komatsu, Noboru; Obayashi, Mikio; Doi, Minoru; Ota, Nobuyoshi; and Iwai, Yoshio, 3,940,728.
Yamamoto, Yasuhiro; and Naito, Michikatsu, 3,939,856.
Nischk, Gunther: *See*—
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Nishida, Kazumori; Kawahashi, Toshinori; and Tanaka, Yoshimasa, to Kabushiki Kaisha Komatsu Seisakasho. Fluid operated brakes and reversing clutches for winch drums. 3,939,950, Cl. 192-4.00R.
Nishihara, Masao; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; Yamasaki, Tatsuo; Nogushi, Masataka; and Nishioka, Kunihiko, to Kobe Steel Ltd. Method and machine for use in hydrostatic extrusion. 3,939,682, Cl. 72-60.000.
Nishikubo, Yasuhiko, to Citizen Watch Co., Ltd. Crystal-controlled electronic timepiece with CMOS switching and frequency-dividing circuits. 3,939,643, Cl. 58-23.00A.
Nishimura, Izuhiko; and Kodaira, Mitsuharu, to Kabushiki Kaisha Suwa Seikosha. Electronic circuit for individually correcting each digit of time displayed. 3,939,641, Cl. 58-23.00R.
Nishioka, Kunihiko: *See*—
Nishihara, Masao; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; Yamasaki, Tatsuo; Nogushi, Masataka; and Nishioka, Kunihiko, 3,939,682.
Nishizawa, Shinhachiro. Exchangeable-dressing doll. 3,939,604, Cl. 46-151.000.
Nissan Motor Co., Ltd.: *See*—
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Iki, Shinichi; and Kosugi, Hideaki, 3,940,567.
Inoue, Naohiko, 3,939,938.
Ito, Hiroshi; and Yoshitsugu, Seikichi, 3,940,176.
Itoh, Takane; and Kamide, Takao, 3,939,650.
Okazaki, Nobuo, 3,939,939.
Sakaki, Yoshihiro; and Eishima, Kensuke, 3,939,903.
Sasabe, Yukiyoshi; and Suzuki, Kunihiko, 3,939,940.
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Nissel, Frank R., to Welex Incorporated. Thickness control system for an extrusion die. 3,940,221, Cl. 425-141.000.
Nitz, Rolf-Eberhard: *See*—
Raabe, Thomas; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,940,406.
Noguchi, Kunio: *See*—
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Non, Tse Quong. Passive restraint safety belt system. 3,940,164, Cl. 280-150.05B.
Noritake, Muneo; and Takeuchi, Masaharu, to INA Seito Co., Ltd. Baking method and kiln for tile. 3,940,240, Cl. 432-122.000.
Norris, Orlin R. Steam generating system including means for reinitiating the operation of a steam bound boiler feed pump. 3,940,058, Cl. 237-9.00R.
North, Robert Jarl, to Allied Chemical Corporation. Process for the production of gamma quinacridone. 3,940,399, Cl. 260-279.0QA.
Norton, David G.: *See*—
Griffiths, Donald E.; Koestner, Joseph H.; and Norton, David G., 3,940,794.
Novak, Arne, to Wlajko Mihic. Cutting tool holder. 3,939,539, Cl. 29-96.000.
Novak, Arne, to Wlajko Mihic. Cutting bit holder with reversible clamp. 3,939,540, Cl. 29-96.000.
Novitski, Edward. Television remote control device. 3,940,701, Cl. 325-392.000.
Nudelman, Rafail Manusovich: *See*—
Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
Nudenberg, Walter; Hagen, Edward L.; Little, Julian R.; and Mao, Chung-Ling, to Uniroyal Inc. 1,2,3,4,4a,5,7,7a-Octahydrothieno[3,4-b]pyrazines 6,6-dioxides. 3,940,396, Cl. 260-268.0BC.
Nuss, James J., to General Electric Company. Oven door handle construction. 3,939,817, Cl. 126-190.000.
Oakley, Roy C., Jr.: *See*—
Czech, James I.; and Oakley, Roy C., Jr., 3,939,674.
Obayashi, Mikio: *See*—
Komatsu, Noboru; Obayashi, Mikio; Doi, Minoru; Ota, Nobuyoshi; and Iwai, Yoshio, 3,940,728.
Oberle, Ronald Ray: *See*—
Torrington, Leslie Albert; and Oberle, Ronald Ray, 3,940,148.
Ochi, Shikanosuke, to Kabushiki Kaisha Sega Enterprises. Racing game device. 3,940,138, Cl. 273-86.00B.
O'Connor, Gary E.: *See*—
Weeks, James E.; Runkle, Charles J.; Junker, Bernhard T.; and O'Connor, Gary E., 3,939,745.
Oehry, Norbert, to Hilti Aktiengesellschaft. Adjustable stop for a bolt welding gun. 3,940,587, Cl. 219-98.000.
Oehry, Norbert; and Wild, Rainer, to Hilti Aktiengesellschaft. Bolt-welding gun with movable supporting legs. 3,940,588, Cl. 219-98.000.
Ogawa, Hideki: *See*—
Kurita, Shoichi; Sata, Naohide; Ogawa, Hideki; and Hiratsuka, Yoshitaka, 3,940,705.
Ogawa, Syozo: *See*—
Ohigashi, Hiroji; Shigenari, Reiko; Ogawa, Syozo; and Sekine, Nobuo, 3,940,637.
Ohashi, Kenji, to Murata Kikai Kabushiki Kaisha. Apparatus for and a method of yarn doffing. 3,940,077, Cl. 242-35.5OA.
Ohashi, Takashi: *See*—
Yukuta, Toshio; and Ohashi, Takashi, 3,940,369.
Ohba, Masaru: *See*—
Kuromoto, Yoshio; Kobori, Toshio; and Ohba, Masaru, 3,940,779.
Ohchi, Kazuo: *See*—
Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, 3,939,634.
Ohigashi, Hiroji; Shigenari, Reiko; Ogawa, Syozo; and Sekine, Nobuo, to Toray Industries, Inc. Polymeric piezoelectric key actuated device. 3,940,637, Cl. 310-8.500.
Ohkawa, Toshio: *See*—
Todani, Yoshihiro; and Ohkawa, Toshio, 3,940,548.
Ohno, Masayoshi; and Ozaki, Osamu, to Tokyo Shibaura Electric Co., Ltd. Metal vapor-trapping system. 3,940,121, Cl. 266-15.000.
Ohsawa, Mitsuo, to Sony Corporation. Wide amplitude range detecting circuit. 3,940,681, Cl. 321-47.000.
Okada, Yasuo: *See*—
Kaneko, Yasuhisa; Komatsu, Yasuhiko; Hibino, Yoshihiro; and Okada, Yasuo, 3,939,897.
Okamoto, Mitsuhiro: *See*—
Nakayama, Yuzaburo; Yamamoto, Akinori; Asahara, Tomohiko; Shimamura, Masaharu; Tsuda, Yoshizo; Igawa, Keisuke; and Okamoto, Mitsuhiro, 3,939,636.
Okano, Kinpei: *See*—
Tomioka, Shunzo; Okano, Kinpei; and Kajiwara, Toshiyuki, 3,940,191.
Okazaki, Nobuo, to Nissan Motor Co., Ltd. Transmission locking device. 3,939,939, Cl. 180-82.00C.
Okino, Yoshihiro: *See*—
Kato, Makoto; and Okino, Yoshihiro, 3,940,202.
Okolischan, Anton: *See*—
Schuller, James T.; and Okolischan, Anton, 3,939,952.
Olcott, Bernard: *See*—
Lorber, Leslie H., 3,939,769.
Olin Corporation: *See*—
Caule, Elmer J., 3,940,303.
Pryor, Michael J.; Crane, Jacob; Friedman, Sam; and Shapiro, Eugene, 3,940,290.
Ollier, Jean-Louis: *See*—
Martin, Jean; Ollier, Jean-Louis; and Petit, Paul, 3,940,150.

Olsen, Robert C.; and Stahlhut, Frederick O., to United States of America, Navy. Precise pulse repetition frequency measuring device and signal sorter. 3,940,768, Cl. 343-18.00E.

Olsson, Burton K., to Chicago Rawhide Manufacturing Company. End face seal assemblies. 3,940,154, Cl. 277-92.000.

Olt, Arthur E., Jr.: *See—*
Miers, Bruce W.; Olt, Arthur E., Jr.; Van Rossem, Richard; and Wait, John D., Jr., 3,940,177.

Olympus Optical Co., Ltd.: *See—*
Kondo, Isao, 3,940,776.

Omega, Louis Brandt & Frere S.A.: *See—*
Desarzens, Pierre, 3,939,689.

O'Mera, Robert J.: *See—*
Nakano, George S.; and O'Mera, Robert J., 3,939,580.

Omoto, Shoji: *See—*
Shomura, Takashi; Omoto, Shoji; Miyado, Shinji; Watanabe, Hiroshi; Inouye, Shigeharu; Yamada, Yujiro; and Niida, Taro, 3,940,479.

Onoda, Tetsuyuki: *See—*
Tanaka, Kozo; and Onoda, Tetsuyuki, 3,940,686.

Onta, Noriyuki: *See—*
Murayama, Keisuke; Toda, Toshimasa; Mori, Eiko; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, 3,940,401.

Optimizer Control Corporation: *See—*
Kalogerson, Thomas A.; and Dandois, Joseph E., 3,939,948.

Orbach, Shelomo, to Tadiran Israel Electronics Industries Ltd. Time division multiplex system with conference link. 3,940,564, Cl. 179-15.0AT.

Orenski, Peter Joseph, to Union Carbide Corporation. Azidosulfonyl compounds. 3,940,427, Cl. 260-349.000.

Orr, Ladd M.: *See—*
Bustos, Rafael T.; and Orr, Ladd M., 3,939,987.

Ortiz, Carlos Mayer. System of suppressing the discharge casing string in deep-well vertical pumps. 3,939,909, Cl. 166-68.500.

Osaka Gas Kabushiki Kaisha: *See—*
Matsumura, Yuji; and Mitsudomi, Hiroyuki, 3,940,242.

Osaka Prefectural Government: *See—*
Takasaki, Shuhei; and Goto, Yasumoto, 3,940,098.

Osborn, Robert O.; and Boyle, Donn G., to Boyle and Osborn. Permeable flexible plastic tubing. 3,939,875, Cl. 138-178.000.

O'Shaughnessy, Marion T.; and Campbell, Robert W., to Phillips Petroleum Company. Arylene sulfide polymers. 3,940,375, Cl. 260-79.100.

Oswald, Alexis A.; Mueller, Wolfgang H.; and Hall, Daniel N., to Exxon Research and Engineering Company. Synthesis of polythiol polymer intermediates from polyunsaturated hydrocarbons. 3,940,374, Cl. 260-79.000.

Ota, Nobuyoshi: *See—*
Komatsu, Noboru; Obayashi, Mikio; Doi, Minoru; Ota, Nobuyoshi; and Iwai, Yoshio, 3,940,728.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See—*
Yamaguchi, Hideo; Kawasaki, Takashi; Takahashi, Shigeo; and Inubuse, Akiyoshi, 3,940,248.

Otto Bock Orthopaedische Industrie KG: *See—*
Horvath, Eduard, 3,939,737.

Otto Grossteinbeck GmbH: *See—*
Heidkamp, Karl-Josef, 3,939,680.

Outboard Marine Corporation: *See—*
Aaen, Olav; and Rose, Edgar, 3,939,720.
Eichinger, Charles H., 3,939,807.

Overhults, Wendell C., to Johnson & Johnson. Cross-linked cyanoacrylate adhesive compositions. 3,940,362, Cl. 260-42.160.

Owens-Corning Fiberglas Corporation: *See—*
Wolf, Warren W., 3,940,278.

Owens-Illinois, Inc.: *See—*
Morrison, John; and Elser, William F., 3,939,787.
Uhlig, Albert R., 3,940,225.
Uhlig, Albert R., 3,940,231.

Owsley, Dennis C.: *See—*
McConaghy, John S., Jr.; and Owsley, Dennis C., 3,940,429.

Oy Tampella AB: *See—*
Salmi, Pekka, 3,939,943.

Oya, Takafumi; Kashiwagi, Yoshiyuki; and Kariya, Yoshihiro, to Rinnai Kabushiki Kaisha. Pressure cooking apparatus. 3,940,057, Cl. 236-20.000.

Ozaki, Osamu: *See—*
Ohno, Masayoshi; and Ozaki, Osamu, 3,940,121.

Ozalid Group Holdings Limited: *See—*
Adams, Ronald Alfred Charles, 3,940,321.

P. R. Mallory & Co. Inc.: *See—*
Pearce, Godfrey R., 3,940,667.
Simmons, Eugene C., 3,940,624.

Paap, Hans J., to Texaco Inc. Three frequency modulated thermal neutron lifetime log. 3,940,613, Cl. 250-269.000.

Pace, Incorporated: *See—*
Young, Loring E.; and Siegel, William Jordan, 3,940,590.

Pacholski, Jan: *See—*
Laski, Jozef; and Pacholski, Jan, 3,940,074.

Package Machinery Company: *See—*
Armour, Donald F., 3,940,224.

Paddock, Richard Charles, to International Business Machines Corporation. Dynamic logic counter. 3,940,596, Cl. 235-92.0LG.

Padgug, Robert Allen, to Calspan Corporation. Nonpredictable actuator for switches or the like. 3,940,632, Cl. 307-112.000.

Paillard S.A.: *See—*
Menzi, Ulrich, 3,939,955.

Palacio, Luis: *See—*
Jenkins, Dennis H.; and Palacio, Luis, 3,939,773.

Palazzolo, Salvatore E.; and McCaskey, Harold O., Jr., to Westinghouse Electric Corporation. Decorative melamine laminates with high yield core stock. 3,940,538, Cl. 428-318.000.

Palitex Project Company GmbH: *See—*
Lossa, Ulrich, 3,939,633.

Palluel, Pierre; Hervier, Jean; and Rousseau, Jean, to Thomson-CSF. Microwave electronic tube with an improved collector. 3,940,655, Cl. 315-3.500.

Paradise, Ronald Y., to Singer Company, The. Digital tacan system. 3,940,763, Cl. 343-6.0DF.

Parish, Robert S.: *See—*
Wilson, Joseph F.; and Parish, Robert S., 3,940,494.

Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., to General Electric Company. Rectifier circuits using transistors as rectifying elements. 3,940,682, Cl. 321-47.000.

Parker Manufacturing Company: *See—*
LaPointe, Gabriel M., 3,940,044.

Parker, Marvin Leon. Removable pouring spout adapatable to different size container openings. 3,940,036, Cl. 222-530.000.

Parlagreco, Thomas J. Single step hair curler with independent self-contained supporting and securing means. 3,939,851, Cl. 132-34.00R.

Pars, Harry G.: *See—*
Razdan, Raj K.; and Pars, Harry G., 3,940,421.

Passarella, Michael T.: *See—*
Farnam, Robert G.; and Passarella, Michael T., 3,939,892.

Patrick, Henry W.: *See—*
Neeb, Robert P.; Patrick, Henry W.; and Mumford, Ray H., 3,940,782.

Patrick, Roy E.: *See—*
Huskins, Chester W.; and Patrick, Roy E., 3,940,474.

Patton, Eugene K.: *See—*
Zook, Donald G.; Miller, Kenneth J.; and Patton, Eugene K., 3,939,880.

Paul, Howard C.; and Tuzson, John J., to Borg-Warner Corporation. Engine torque sensor device. 3,939,702, Cl. 73-115.000.

Pawlowski, Stanislaw: *See—*
Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.

Pearce, Godfrey R., to P. R. Mallory & Co. Inc. Electrical device and method of making the same. 3,940,667, Cl. 317-230.000.

Pearson, Raymond H. Odor control ventilator. 3,939,506, Cl. 4-213.000.

Pease, Wilder F.: *See—*
Lamberti, Vincent; and Pease, Wilder F., 3,940,433.

Peer, John Charles, to RCA Corporation. Deflection system with overscan protection. 3,940,661, Cl. 315-370.000.

Pellerin, Emery A. Utensils for eating strands of foods. 3,939,562, Cl. 30-147.000.

Pelousek, Herbert; Horbach, Alfred; Bottenbruch, Ludwig; and Binsack, Rudolf, to Bayer Aktiengesellschaft. Preparation of high molecular polyesters of 1,4-butanediol. 3,940,367, Cl. 260-45.95R.

Peltzer, Bernd: *See—*
Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, 3,940,350.

Pembroke, Richard W., to Telex Computer Products, Inc. Vacuum column loading interlock. 3,940,090, Cl. 242-182.000.

Penny, Robert Noel, to Caterpillar Tractor Co. Mounting for attaching a tubular member in co-axial registration with an aperture in a wall. 3,939,651, Cl. 60-39.320.

Penrice, Peter John: *See—*
Lupton, David Francis; Mason, John Jefferson; and Penrice, Peter John, 3,940,295.

Pequignot, Michel. Method and apparatus for stimulating a heart to eliminate rhythmic abnormalities, especially tachycardias. 3,939,844, Cl. 128-419.0PG.

Perahia, Avraham, to Sperry Rand Corporation. Acoustic delay surface wave motion transducer systems with enhanced stability. 3,940,636, Cl. 310-8.100.

Percival, Albert: *See—*
Corbett, John Roger; and Percival, Albert, 3,940,416.

Perino, Thomas W.: *See—*
Bense, William M.; and Perino, Thomas W., 3,940,078.

Perkin-Elmer Corporation, The: *See—*
Estey, Willard E., 3,939,713.

Perkins, William D.: *See—*
Harrell, Edsel A.; Sparks, Alton N.; Perkins, William D.; and Hare, Woodrow W., 3,939,883.

Person, Abraham, to Global Marine, Inc. Parking brake for subsea mining lift system. 3,939,991, Cl. 214-1.00P.

Pertec Corporation: *See—*
Bleiman, Lewis W., 3,940,793.

Perusse, Norman J.: *See—*
Murphy, Robert; and Perusse, Norman J., 3,939,622.

Peschl, Ivan Anton Slavko Zdravko. Method and device for measuring the shearing stress of powdery and/or granular material. 3,939,701, Cl. 73-101.000.

Peter, Richard: *See—*
DeFago, Raymond; Angliker, Hans-Joerg; Holzrichter, Herbert; Kneubuehler, Werner; and Peter, Richard, 3,940,246.

Peterson, George N., to Dresser Industries, Inc. Reinforced grinding wheel. 3,939,612, Cl. 51-293.000.

Petit, Paul: *See—*
Martin, Jean; Ollier, Jean-Louis; and Petit, Paul, 3,940,150.

Petro, Claude; and Glise, Andre. Mould manufacturing device. 3,939,898, Cl. 164-150.000.

Petrov, Igor Nikolaevich: *See—*
Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.

Petrov, Vladimir Vasilievich: *See—*
Akhundov, Enver Bejukovich; Anischenko, Vadim Andreevich; Petrov, Vladimir Vasilievich; and Semashko, Petr Stepanovich, 3,940,687.

Pettibone Corporation: *See—*
Newell, Robert Keith, 3,940,188.

Petty, Stanley W.; Rosa, Richard J.; and Enos, George R., to Avco Everett Research Laboratory, Inc. MHD generator with uniform current distribution. 3,940,640, Cl. 310-11.000.

Petty, Stanley W.: *See—*
Enos, George R.; Rosa, Richard J.; and Petty, Stanley W., 3,940,639.

Petusky, Neil J.; and Kadyszewski, Ronald V., to Decision Data Computer Corporation. Programmably alterable incrementing system. 3,940,127, Cl. 271-266.000.

Pfarrwaller, Erwin, to Sulzer Brothers Limited. Gripper shuttle for weft yarns. 3,939,878, Cl. 139-125.000.

Pfeiffer, Robert C.: *See—*
Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, 3,940,083.

Pharmaco, Inc.: *See—*
Larson, Roger R., 3,940,003.

Philipp, Rainer: *See—*
Heinemann, Otto; and Philipp, Rainer, 3,940,118.

Phillips, David C.; and Alvino, William M., to Westinghouse Electric Corporation. Electropolymerization of difunctional monomers to form polyimides. 3,940,322, Cl. 204-59.00R.

Phillips Petroleum Company: *See—*
Farfaglia, Silvio T., 3,939,960.
Favre, John A., 3,940,471.
Hutchinson, William M., 3,940,342.
Kinney, Alfred W., 3,940,014.
Needham, Donald G.; and Griffin, Ray D., 3,940,547.
O'Shaughnessy, Marion T.; and Campbell, Robert W., 3,940,375.
Schirmer, Robert M., 3,939,653.
Volz, Herbert A., 3,939,662.
Wilson, Joseph F.; and Parish, Robert S., 3,940,494.
Zuech, Ernest A., 3,940,346.

Phillips, Reginald Andrew, to Dobson Park Industries Limited. Glands. 3,940,151, Cl. 277-27.000.

Photocircuits Division of Kollmorgen Corporation: *See—*
Morino, Ronald; Tucker, William B.; and Keogh, Raymond J., 3,940,677.

Picker, Amos, to Raytheon Company. Junction target monoscope. 3,940,652, Cl. 313-401.000.

Pickett, Earl H.: *See—*
Price, Macy J.; and Pickett, Earl H., 3,939,977.

Pickett, John E. P.; Kinney, Thomas D.; and Winders, Gene M. Compact telescoping tissue processing, embedding microtome holder and storage receptacle. 3,940,219, Cl. 425-117.000.

Pierce Chemical Company: *See—*
Smith, Paul K., 3,940,420.

Pierre Fabre S.A.: *See—*
Stenger, M. Antoine; Cousse, Henri; and Mouzin, M. Gilbert, 3,940,490.

Pierre, Jacques; and Simon, Pierre, to Pont-A-Mousson S.A. Assembly comprising a wheel and a disc brake disc, in particular for a railway vehicle. 3,939,946, Cl. 188-218.0XL.

Pierro, Joseph W. Adjustable support means. 3,939,986, Cl. 211-74.000.

Pierson, Joseph E.; and Stookey, Stanley D., to Corning Glass Works. Glass-ceramics containing fibers exhibiting thermoplastic properties. 3,940,277, Cl. 106-39.600.

Piesiur, Eugeniusz: *See—*
Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.

Pignatelli, Enrico, to COM. E. IRA, S.r.C. Fuel saving device. 3,939,866, Cl. 137-493.400.

Pillsbury Company, The: *See—*
Turpin, Charles H.; Reid, Francis R.; and Leezer, James R., 3,940,496.

Pilz, Gilbert B., to Young Ottawa, Inc. Convertible trailer/rail car traction unit. 3,940,167, Cl. 280-456.00R.

Pinczuk, Leon: *See—*
Horowitz, Carl; Pinczuk, Leon; and Dichter, Michael, 3,940,377.

Pinson, George T., to Boeing Company, The. High energy sensor. 3,939,706, Cl. 73-190.0EW.

Pinto, Alwyn: *See—*
Connell, Anthony John; and Pinto, Alwyn, 3,940,428.

Pissiotas, Georg, to Ciba-Geigy AG. 2,4,5-Trichloro- and 2,4,5-tribromoimidazole derivatives and pesticidal compositions containing them. 3,940,412, Cl. 260-309.000.

Pitsch, Johann; and Lasserre, Pierre, to Compagnie Europeenne d'Accumulateurs; and Societe Fulmen. Mechanically reinforced high porosity partially fused glass fiber galvanic separator. 3,940,536, Cl. 428-288.000.

Pittet, Alan Owen; Klaiber, Erich Manfred; Vock, Manfred Hugo; Shuster, Edward J.; and Vinals, Joaquin, to International Flavors & Fragrances Inc. Food or flavor containing 2,6,6-trimethyl-1-cyclohexen-1-ylacetaldehyde. 3,940,499, Cl. 426-534.000.

Place, Donald E., to Therm-O-Disc Incorporated. Thermostat with heat conductor. 3,940,729, Cl. 337-377.000.

Plakas, Chris J.; and Glaros, George S., to Vitatect Corporation. Testing using luminescent reaction. 3,940,250, Cl. 23-230.00B.

Plaskolite, Inc.: *See—*
Bero, Robert D., 3,939,620.

Platek, Stanley F. Dual purpose cleaning abstract. 3,939,515, Cl. 15-321.000.

Piempel, Manfred: *See—*
Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Piempel, Manfred, 3,940,413.

Plisky, John J.: *See—*
Mohnach, Michael G.; and Plisky, John J., 3,940,068.

Pluss-Staufer AG: *See—*
Delfosse, Pierre; and Bosshard, Alfred, 3,940,550.

Poehlmann, George: *See—*
Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., 3,939,559.

Poerink, Jannes Jonge. Apron or plate belt conveyor. 3,939,964, Cl. 198-195.000.

Pohto, Gerald R.: *See—*
Thomas, Vaselios H.; and Pohto, Gerald R., 3,940,328.

Pointon, Peter, to Alphameric Keyboards Limited. Keyboard structure having panel mounted key actuators with electrical component operating element. 3,940,578, Cl. 200-5.00A.

Pokar, Jochen: *See—*
Hempowitz, Gunter; and Pokar, Jochen, 3,940,623.

Polaroid Corporation: *See—*
Ivester, Andrew S., 3,940,774.
Schuler, Norman W., 3,940,304.

Polata, Bohumil, to Signetics Corporation. Majority carriers-variable threshold rectifier and/or voltage reference semiconductor structure. 3,940,783, Cl. 357-13.000.

Polenov, Jury Tikhonovich: *See—*
Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.

Poliniak, Eugene Samuel: *See—*
Fech, John, Jr.; and Poliniak, Eugene Samuel, 3,940,507.

Politechnika Slaska im Wincentego Pstrowskiego: *See—*
Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.

Polk, Donald E.; and Bedell, John R., to Allied Chemical Corporation. Apparatus for continuous casting metal filament on interior of chill roll. 3,939,900, Cl. 164-27.000.

Polk, Donald E.; and Morris, Robert C., to Allied Chemical Corporation. Method of producing amorphous cutting blades. 3,940,293, Cl. 148-11.50F.

Pollack, Martin H., to NASGLO International Corporation. Electrodeposition of bright tin-nickel alloy. 3,940,319, Cl. 204-43.00S.

Polymer Research Corporation of America: *See—*
Horowitz, Carl; Pinczuk, Leon; and Dichter, Michael, 3,940,377.

Polysius AG: *See—*
Heinemann, Otto; and Philipp, Rainer, 3,940,118.
Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Pommer, Horst: *See—*
Reif, Werner; Fischer, Roman; and Pommer, Horst, 3,940,445.

Pont-A-Mousson S.A.: *See—*
Pierre, Jacques; and Simon, Pierre, 3,939,946.

Poppe, Herbert: *See—*
Franz, Gunther; Heinrich, Karl; and Poppe, Herbert, 3,939,637.

Portal, Pierre. Spool. 3,940,087, Cl. 242-118.620.

Portner, Robert; and Miller, Phillip, to Magna Mir, Inc. Projector case assembly. 3,940,209, Cl. 353-79.000.

Postma, Norman D.; and Barton, David W., to Ford Motor Company. Multiple regenerators. 3,939,657, Cl. 60-526.000.

Potter, Edward, to Potter, Edward; and Dant & Russell, Inc., part interest to each. Apparatus for molding a particle board. 3,940,230, Cl. 425-451.900.

Power-Flo Products, Inc.: *See—*
Lewis, George E., 3,939,735.

PPG Industries, Inc.: *See—*
Demarest, Henry M., Jr., 3,940,531.
Fahey, Dennis M., 3,940,357.
Gulotta, Joseph A.; Knavish, Leonard A.; and Senn, John E., 3,940,256.
Thomaswick, Ronald J., 3,939,978.

Pradzynski, Andrzej H.: *See—*
Rhodes, John R.; Weinstein, David H.; and Pradzynski, Andrzej H., 3,940,614.

Pram Inc.: *See—*
Banker, Harold J., 3,939,800.

Precision Industries, Inc.: *See—*
Verwey, William G. A., 3,940,045.

Precision Thin Film Corporation: *See—*
Barker, James N.; and Cartwright, Edward A., 3,939,679.

Premier Industrial Corporation: *See—*
Allenbaugh, George G., Jr., 3,940,107.

Prendergast, John M., Jr.: *See—*
Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., 3,939,559.

Prescott, Robert S.: *See—*
Conroy, Walter J.; Prescott, Robert S.; and Proulx, George G., 3,940,790.

Priaroggia, Paolo Gazzana, to Industrie Pirelli S.p.A. Method and apparatus for extruding a layer of extrudable material on a body having inaccessible ends. 3,940,300, Cl. 156-49.000.

Price, Macy J.; and Pickett, Earl H. Sealing ring. 3,939,977, Cl. 206-400.000.

Price, Robert; and Craig, John W., to Sperry Rand Corporation. Apparatus and method for reducing multiplicative gain variation distortions in data recording and transmission channels. 3,940,694, Cl. 325-42.000.

Princeton Electronics Products, Inc.: *See—*
Hofstein, Steven R., 3,940,651.

Pringle, William L., to United States Steel Corporation. Railway truck assembly. 3,939,779, Cl. 105-180.000.

Pringle, William L., to United States Steel Corporation. Steering knuckle assembly. 3,940,159, Cl. 280-96.100.

Procter & Gamble Company, The: *See—*
Kock, Ronald W., 3,940,169.

Programming Technologies, Inc.: *See—*
Bennett, William P., 3,940,080.

Proulx, George G.: *See—*
Conroy, Walter J.; Prescott, Robert S.; and Proulx, George G., 3,940,790.

Prowse, Ronald L.: *See—*
McMullen, Arthur G.; Ruscoe, Michael J. H.; Clegg, Maurice A.; and Prowse, Ronald L., 3,940,254.

Pryor, Michael J.; Crane, Jacob; Friedman, Sam; and Shapiro, Eugene, to Olin Corporation. Process for preparing copper base alloys. 3,940,290, Cl. 148-2.000.

Pscheidl, Hans: *See—*
Doschko, Werner; and Pscheidl, Hans, 3,939,632.

Pucka, Grzegorz: *See—*
Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.

Pugachev, Vladislav Alexandrovich: *See—*
Apsit, Voldemar Voldemarovich; Ustinsky, Alexei Petrovich; Pugachev, Vladislav Alexandrovich; and Usachev, Mikhail Maiorovich, 3,940,668.

Purchase, Francis Jack, to Autotelic Industries, Ltd. Method and apparatus for creating optical displays. 3,940,757, Cl. 340-324.00M.

Purdue Research Foundation: *See—*
Cooper, George R.; and Newhouse, Vernon L., 3,940,731.

Purdy, Harold Lawrence: *See—*
Scheingold, William Samuel; Purdy, Harold Lawrence; and Youngfleish, Frank Christian, 3,940,786.

Putman, Jack D.; and Wytko, Richard, to Weyerhaeuser Company. Single-piece container blank with multi-ply end panels. 3,940,053, Cl. 229-34.00R.

Pyles, Harley G., to Mining Equipment Division of FMC Corporation. Variable discharge surge feeder and bolter. 3,939,958, Cl. 198-7.00R.

Qonaar Corporation: *See—*
Collins, Terence John, 3,939,954.

Quality Products, Inc.: *See—*
Bonnett, Richard L., 3,940,013.

Quimet, Donald J., to Telephone & Data Products, Inc. Alarm reporting system. 3,940,739, Cl. 340-164.00R.

Quirke, Patric C., to Whitewater Electronics, Inc. Saturable reactor for pincushion distortion correction. 3,940,662, Cl. 315-400.000.

Quisenberry, Tony M.: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 3,940,742.

Raabe, Thomas; Scholtholt, Josef; and Nitz, Rolf-Eberhard, to Cassella Farbwerke Mainkur Aktiengesellschaft. Derivatives of 1-phenoxy-3-amino-propane-2-ol and process for their production. 3,940,406, Cl. 260-296.0AE.

Radecki, Tony: *See—*
Gunzel, Rudolph M., Jr.; James, Donald R.; and Radecki, Tony, 3,940,069.

Radutsky, Grigory Avramovich: *See—*
Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,939,961.

Ragone, Bernardo P., to Vitamaster Industries, Inc. Exercising apparatus. 3,940,128, Cl. 272-73.000.

Raichle, Karl: *See—*
Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, 3,940,350.

Rainey, Don E. Moisture pod for the preservation of perishable comestibles. 3,940,062, Cl. 239-56.000.

Rakhmanova, Erlina Mavrikievna: *See—*
Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Ralston Purina Company: *See—*
Flier, Ronald J., 3,940,495.

Randal, Dorothy, executrix: *See—*
Frisch, Erling, deceased; and Andrews, Harry N., 3,940,311.

Rank Xerox Ltd.: *See—*
Baker, Donald Arthur; and Billings, Peter Robert, 3,940,514.

Ranzi, Cristiana, Cesare Giannetta Ranzi, Giulio Ranzi, Riccardo Ranzi and Matteo Ranzi, heirs: *See—*
Ranzi, Ubaldo, deceased, 3,939,731.

Ranzi, Ubaldo, deceased (by Ranzi, Cristiana, Cesare Giannetta Ranzi, Giulio Ranzi, Riccardo Ranzi and Matteo Ranzi, heirs), to S.p.A. Ranzi Legnano. Differential torque multiplying device. 3,939,731, Cl. 74-688.000.

Rastatter, Edward L. Vortical cyclone cluster apparatus. 3,940,331, Cl. 209-211.000.

Rau, Peter: *See—*
Knodler, Diethelm; Kropfl, Hans; Rau, Peter; and Wittmann, Theodor, 3,940,314.

Rauhut, Michael McKay, to American Cyanamid Company. Device for emergency lighting. 3,940,604, Cl. 240-2.250.

Raymond International, Inc.: *See—*
Swenson, William J., 3,939,922.

Raymond Lee Organization, Inc., The: *See—*
Franco, John A., 3,940,129.
Hack, Siegfried, 3,940,521.
Thomson, William H., 3,939,989.

Rayner, Bernard P.: *See—*
Clarke, Peter G.; and Rayner, Bernard P., 3,939,869.

Raytheon Company: *See—*
Booth, Alfred E., 3,940,719.
Fassett, Matthew; and Balzano, Quirino, 3,940,770.
Picker, Amos, 3,940,652.

Razdan, Raj K.; and Pars, Harry G., to Arthur D. Little, Inc. Intermediates for the preparation of thienobenzopyrans and thiopyranobenzopyrans. 3,940,421, Cl. 260-327.0TH.

RCA Corporation: *See—*
Ben-dov, Oded, 3,940,772.
Boltz, Charles D., Jr., 3,940,556.
Crandall, Richard Seely; and Faughnan, Brian Wilfred, 3,940,205.
Deal, Samuel Broughton; and Bartch, Donald Walter, 3,940,511.
Fech, John, Jr.; and Poliniak, Eugene Samuel, 3,940,507.
Keigler, John Edward; and Muhlfelder, Ludwig, 3,940,096.
Peer, John Charles, 3,940,661.
Sherman, Samuel Mark; and Goldman, Leman, Jr., 3,940,769.
Sickles, Louis, II, 3,940,695.
Torrington, Leslie Albert; and Oberle, Ronald Ray, 3,940,148.

Read, Alvin A.: *See—*
Ellingson, William A.; and Read, Alvin A., 3,940,619.

Rebmann, Donald A.: *See—*
Tipton, Larry J.; Rebmann, Donald A.; and Reise, Donald A., 3,940,459.

Reed, David W.: *See—*
Clark, Richard S.; Lininger, Ronald L.; and Reed, David W., 3,940,059.

Reed, E. Smith, Jr.; and Scherbring, David J., to Toro Company, The. Spiker blade. 3,939,917, Cl. 172-555.000.

Reed, Robert D.; Zink, John Smith; and Goodnight, Hershel E., to John Zink Company. Noiseless pms burner. 3,940,234, Cl. 431-348.000.

Rees, Richard W.: *See—*
Greenspan, George; Rees, Richard W.; and Russell, Peter B., 3,940,393.

Reggi, Romano, to COMATEL — Comptoir Europeen de Materiel Electronique. Method for inserting connecting pins in a printed circuit and machine for executing said method. 3,939,542, Cl. 29-203.00B.

Regie Nationale des Usines Renault: *See—*
Morin, Jean, 3,939,736.

Rehn, Karl-Heinz; and Middelmann, Heinz, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Balloon limiter with wetting means in a textile machine. 3,939,635, Cl. 57-108.000.

Reid, Francis R.: *See—*
Turpin, Charles H.; Reid, Francis R.; and Leezer, James R., 3,940,496.

Reif, Werner; Fischer, Roman; and Pommer, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 2-methyl-4-halobut-2-en-1-als. 3,940,445, Cl. 260-601.00H.

Reinhardt, Helmut; Trebinger, Karl; and Kallrath, Gottfried, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Apparatus for the releasing of materials from voluminous precipitates or suspensions. 3,940,252, Cl. 23-270.00R.

Reise, Donald A.: *See—*
Tipton, Larry J.; Rebmann, Donald A.; and Reise, Donald A., 3,940,459.
Remele, Karl; and Weiberg, Dieter, to Remele, Karl. Device for printing and feeding covers to containers. 3,939,625, Cl. 53-131.000.
Rendle, Kenneth George, to Rosemount Engineering Company Limited. Method of making resistance thermometer sensors. 3,939,557, Cl. 29-612.000.
Renk, Richard J.; and Boller, George F., to Miller, Gladys D. Traction motor bearing lubrication assembly. 3,940,189, Cl. 308-132.000.
Repiscak, Michael: *See—*
Castagna, Eugene G.; Schrage, Albert; and Repiscak, Michael, 3,940,379.
Reynolds Metals Company: *See—*
Dooley, Milton T., 3,940,641.
Gonzalez, Juan M.; and Nichols, William V., Jr., 3,940,237.
Rheinstahl Aktiengesellschaft: *See—*
Albrecht, Erhard, 3,939,782.
Varges, Gunter; and Graalmann, Franz, 3,939,790.
Rhodes, John R.; Weinstein, David H.; and Pradzynski, Andrzej H., to Columbia Scientific Industries Corporation. Method and apparatus for collection and analysis of mercury in the atmosphere. 3,940,614, Cl. 250-273.000.
Rhone-Poulenc-Textile: *See—*
Arsac, Andre, 3,940,533.
Rhyne, William A.: *See—*
Rosborough, Jerry J.; and Rhyne, William A., 3,939,753.
Rhythm Watch Co. Ltd.: *See—*
Takita, Ryoichi, 3,940,645.
Rice, Howard Gene: *See—*
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Rich, Dale: *See—*
Sauder, Robert A.; Kendrick, Gary R.; and Rich, Dale, 3,940,244.
Richardson, John: *See—*
Matthews, Kenneth Gerald; and Richardson, John, 3,940,302.
Richardson, Philip C.: *See—*
Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 3,940,742.
Richmond, Albert R.: *See—*
Barnes, Thomas W.; and Richmond, Albert R., 3,939,926.
Richmond Manufacturing Company, The: *See—*
Barnes, Thomas W.; and Richmond, Albert R., 3,939,926.
Richter, Sidney B.; and Krenzer, John, to Velsicol Chemical Corporation. Dioxane substituted-α-haloanilides as herbicides. 3,940,259, Cl. 71-88.000.
Richter, Ulf; and Korves, Antonius, to Dynamit Nobel Aktiengesellschaft; and Jacob and Korves GmbH. Process for welding explosive-clad metal sheets. 3,940,049, Cl. 228-107.000.
Richter, Virgil John: *See—*
Gray, Frederick William; Richter, Virgil John; and Limekiller, Andrew Henry, 3,940,341.
Ridley, Ian M. Rotor gun for the air placement of granular and cementitious materials. 3,940,119, Cl. 259-151.000.
Riessberger, Klaus: *See—*
Theurer, Josef; and Riessberger, Klaus, 3,939,774.
Riley, Arthur W.: *See—*
Haun, Marion W.; Mos, Robert J.; and Riley, Arthur W., 3,940,796.
Riley, Richard E., to Bourns, Inc. Method of forming an electrical network package. 3,939,558, Cl. 29-627.000.
Ringer, T. Rayman: *See—*
Stallabrass, James R.; Ringer, T. Rayman; Bailey, Donald L.; and Hearty, Patrick F., 3,940,622.
Rinker, James W.; and Jacobs, William M., to Exxon Research and Engineering Company. Corrosion resistant glass-reinforced plastic pipe liner. 3,939,873, Cl. 138-144.000.
Rinnai Kabushiki Kaisha: *See—*
Oya, Takafumi; Kashiwagi, Yoshiyuki; and Kariya, Yoshihiro, 3,940,057.
Ritchie, Jack J.: *See—*
Winslow, Gerald R.; and Ritchie, Jack J., 3,940,162.
Ritzmann, Horst: *See—*
Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.
Riva Calzoni S.p.A.: *See—*
Suzzi, Gianoberto, 3,939,994.
Rivelli, Joseph A. Fencing kit. 3,940,114, Cl. 256-32.000.
Rivman, Samuel J.; and Da Costa, Alvaro, to Eastern Poly Packaging Company. Apparatus for securing articles to film-like material. 3,940,307, Cl. 156-514.000.
Robert, Jacques: *See—*
Borel, Joseph; Toupillier, Louise Peccoud nee; and Robert, Jacques, 3,939,556.
Robert, Jean, to Saurer Diederichs (Societe Anonyme). Weft-beating mechanism with variable-stroke reed. 3,939,876, Cl. 139-26.000.
Roberts, Arthur H. Rigid plastics tile with textured surface. 3,940,528, Cl. 428-161.000.
Roberts, Clifford J., Jr.: *See—*
Hepford, Richard R.; and Roberts, Clifford J., Jr., 3,940,529.
Roberts, George C., to Monogram Industries, Inc. Recirculating electrolytic toilet. 3,939,499, Cl. 4-10.000.
Robinson, George Dennis, Jr.: *See—*
McCrory, Rollin John; and Robinson, George Dennis, Jr., 3,940,020.
Robison, Herbert D., to Ecodyne Corporation. Horizontal flow clarifier. 3,940,337, Cl. 210-197.000.
Robison, Jimmy R. Multi-purpose combination trailer and picnic table. 3,940,175, Cl. 296-22.000.
Robison, John Crosby, to Robison, Mildred M., a part interest. Basement sump construction. 3,939,863, Cl. 137-357.000.
Robison, Mildred M.: *See—*
Robison, John Crosby, 3,939,863.
Rock, Kingsley Carlton, Jr.: *See—*
Kaye, Michael D.; Rock, Kingsley Carlton, Jr.; Johnson, Charles E.; and Showalter, J. Philip, 3,939,823.
Rocka, Arthur J. Outboard motor protective cover. 3,939,795, Cl. 115-17.000.
Rockwell International Corporation: *See—*
Dickson, Fred D., 3,939,871.
Grogan, Martin L., 3,940,634.
Wild, Charles E., 3,940,771.
Rogers, Daniel M.: *See—*
Gimple, James J.; Lasley, Charles T.; and Rogers, Daniel M., 3,940,061.
Rogers, Gary W.; Tottie, Leroy A.; Hamilton, Vaughn G.; Goodwin, Orville O.; and Baker, Jean A., to Evans Products Company. Saw guard. 3,939,746, Cl. 83-544.000.
Rohm and Haas Company: *See—*
Martoranc, Richard, 3,940,353.
Rohr Industries, Inc.: *See—*
Ross, James A.; and Harris, Bert C., 3,939,776.
Ross, James A.; and Harris, Bert C., 3,939,778.
Rohs, Ulrich. Axial-piston combustion engine. 3,939,809, Cl. 123-58.00B.
Roj & Vella S.p.A.: *See—*
Vella, Sergio, 3,940,079.
Rosa, Richard J.: *See—*
Enos, George R.; Rosa, Richard J.; and Petty, Stanley W., 3,940,639.
Petty, Stanley W.; Rosa, Richard J.; and Enos, George R., 3,940,640.
Rosborough, Jerry J.; and Rhyne, William A., to United States of America, Navy. Three axis coil magnetic minesweeping system. 3,939,753, Cl. 89-1.00M.
Rose, Edgar: *See—*
Aacn, Olav; and Rose, Edgar, 3,939,720.
Rosemount Engineering Company Limited: *See—*
Rendle, Kenneth George, 3,939,557.
Rosen, Henri E. Exercise apparatus. 3,939,932, Cl. 180-33.00C.
Rosenbaum, Georges: *See—*
Vanlerberghe, Guy; and Rosenbaum, Georges, 3,940,477.
Ross, James A.; and Harris, Bert C., to Rohr Industries, Inc. Railway truck magnetic suspension. 3,939,776, Cl. 104-23.0FS.
Ross, James A.; and Harris, Bert C., to Rohr Industries, Inc. Railway truck magnetic suspension method. 3,939,778, Cl. 104-148.0MS.
Ross, John Reuben: *See—*
Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, 3,940,163.
Ross, Ulrich: *See—*
Rothert, Klaus-Dieter; Stilkenbaumer, Herbert; Fischer, Gudrun; Madler, Armin; and Ross, Ulrich, 3,939,710.
Rossi, Alberto: *See—*
Haas, Georges; Jenny, Erwin F.; and Rossi, Alberto, 3,940,434.
Rossi, Eugene F.; and Konzal, Daryl R., to Allis-Chalmers Corporation. Rotary reducing kiln seal. 3,940,239, Cl. 432-115.000.
Roth, Johann, to Braun Aktiengesellschaft. Control frequency generator for a movie camera. 3,940,208, Cl. 352-12.000.
Roth, Russell B., to Altair, Incorporated. Magnetically actuated tube compressing valve. 3,939,821, Cl. 128-1.00R.
Rothenbucher, Robert K., to Lummus Company, The. Air cooled exchanger. 3,939,906, Cl. 165-76.000.
Rother, Wolfgang: *See—*
Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.
Rothert, Klaus-Dieter; Stilkenbaumer, Herbert; Fischer, Gudrun; Madler, Armin; and Ross, Ulrich, to Siemens Aktiengesellschaft; and Diessel GmbH & Co. Liquid flow meter. 3,939,710, Cl. 73-253.000.
Rothrock, Elmer Weyman, to Chicago Bridge & Iron Company. Lateral support of an lng ship tank using flexible bracing. 3,939,791, Cl. 114-74.00A.
Rounds, Thomas Wilbur, Jr.: *See—*
Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, 3,939,579.
Rousseau, Jean: *See—*
Palluel, Pierre; Hervier, Jean; and Rousseau, Jean, 3,940,655.
Roussel-UCLAF: *See—*
Martel, Jacques; Heymes, Rene; and Lutz, Andre, 3,940,354.
Rowley, Cecil Alan, to Domtar Limited. End load container. 3,940,055, Cl. 229-52.00B.
Ruben, Samuel. Nickel oxide electric current producing cell. 3,940,284, Cl. 136-24.000.
Rudolf Brand, Firma: *See—*
Marterer, Karl, 3,940,027.

Rudy, Hans, heir: *See—*
Hustede, Helmut; Rudy, Herman, deceased; Rudy nee Ringelmann, Liselotte, heir; Rudy, Hans, heir; and Sallewsky nee Rudy, Barbara, heir, 3,940,315.
Rudy, Herman, deceased: *See—*
Hustede, Helmut; Rudy, Herman, deceased; Rudy nee Ringelmann, Liselotte, heir; Rudy, Hans, heir; and Sallewsky nee Rudy, Barbara, heir, 3,940,315.
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Hustede, Helmut; Rudy, Herman, deceased; Rudy nee Ringelmann, Liselotte, heir; Rudy, Hans, heir; and Sallewsky nee Rudy, Barbara, heir, 3,940,315.
Ruf, Max; and Steinwart, Johannes, to Audi NSU Auto Union Aktiengesellschaft; and Wankel GmbH. Rotary piston four-stroke internal combustion engine. 3,939,655, Cl. 60-286.000.
Rumpler, Allen G. Core structure with L-shaped back member and magnetic bonding material. 3,940,798, Cl. 360-127.000.
Runkle, Charles J.: *See—*
Weeks, James E.; Runkle, Charles J.; Junker, Bernhard T.; and O'Connor, Gary E., 3,939,745.
Runte, Robert Ralph, to Fascination, Ltd. Amusement device. 3,940,136, Cl. 273-85.00R.
Ruppe, Charles R., to Deering Milliken Research Corporation. Apparatus for imparting a random wrinkled or crushed appearance to pile fabrics. 3,939,536, Cl. 26-2.00R.
Ruscoe, Michael J. H.: *See—*
McMullen, Arthur G.; Ruscoe, Michael J. H.; Clegg, Maurice A.; and Prowse, Ronald L., 3,940,254.
Russell, Carroll E. Document transportation case. 3,939,982, Cl. 206-509.000.
Russell, David John: *See—*
Jeppsson, Martin Wilhelm Ivan; Lindstrom, Bruce William; and Russell, David John, 3,940,566.
Russell, Peter B.: *See—*
Greenspan, George; Rees, Richard W.; and Russell, Peter B., 3,940,393.
Russo, John A.; and Greenberg, Mishel, to Chesebrough Pond's Inc. Aerosol dispensing device. 3,940,024, Cl. 222-182.000.
Rutkowski, Karl; Bock, Helmuth-Joachim; and Gerke, Peter, to Siemens Aktiengesellschaft. Circuit arrangement for telephone exchange installations with central control means and a plurality of individual apparatuses having a common information communication line connecting the individual apparatus to the central control means. 3,940,568, Cl. 179-18.0ES.
Rychlewski, Jerzy: *See—*
Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.
Ryder, Francis E., to Ryder International Corporation. Contact lens capsule with indicating means. 3,939,968, Cl. 206-5.100.
Ryder International Corporation: *See—*
Ryder, Francis E., 3,939,968.
Ryder Truck Rental, Inc.: *See—*
Curtis, H. James, 3,939,894.
Sable, Harvey J.: *See—*
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Sahm, Wilfried: *See—*
Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, 3,940,340.
Saida, Youichi; Ito, Hajime; and Imanaga, Kojiro, to Mitsubishi Kinzoku Kabushiki Kaisha. Rotary type hydraulic servo-mechanism. 3,939,756, Cl. 91-370.000.
St. Clair, Maurice W.: *See—*
Ward, Curtis E.; St. Clair, Maurice W.; De Pue, James M., Jr.; and Miller, Albert J., 3,940,656.
St. Claire, Ebba J., Jr. Batting practice device. 3,940,131, Cl. 273-26.00R.
Saint-Ruf, Germain; Chanh, Pham Huu; and Hoi, Buu. Yohimbine derivatives, process for their preparation and their applications. 3,940,387, Cl. 260-240.0AL.
Sajeva, Raoul, to Ing. C. Olivetti & C., S.p.A. Data processing unit having a plurality of hardware circuits for processing data at different priority levels. 3,940,745, Cl. 340-172.500.
Sakai, Tadao: *See—*
Kawai, Masayoshi; Shishido, Tadao; Ishiguro, Shoji; and Sakai, Tadao, 3,940,271.
Sakaki, Yoshihiro; and Eishima, Kensuke, to Nissan Motor Co., Ltd. Seal assembly for a rotary regenerative heat exchanger. 3,939,903, Cl. 165-9.000.
Sakamoto, Masahiro: *See—*
Horinouchi, Tsukasa; Egawa, Setsuya; and Sakamoto, Masahiro, 3,940,539.
Sakuma, Kenichi, to Nippon Gakki Seizo Kabushiki Kaisha. Ski structure. 3,940,157, Cl. 280-11.13L.
Sallewsky nee Rudy, Barbara, heir: *See—*
Hustede, Helmut; Rudy, Herman, deceased; Rudy nee Ringelmann, Liselotte, heir; Rudy, Hans, heir; and Sallewsky nee Rudy, Barbara, heir, 3,940,315.
Salmi, Pekka, to Oy Tampella AB. Lubrication of piston operated drill with central flushing tube. 3,939,943, Cl. 184-6.140.
Sandfort, Robert M., to Monsanto Company. Mutually exclusive parallel-sided loops. 3,940,751, Cl. 340-174.0TF.
Sandoz Ltd., (Sandoz AG): *See—*
Aebli, Horst; Fleck, Fritz; and Schmid, Horst, 3,940,388.
Kittl, Hans, 3,940,410.
Sankyo Company Limited: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 3,940,363.
Murayama, Keisuke; Toda, Toshimasa; Mori, Eiko; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, 3,940,401.
Santa Fe International Corporation: *See—*
Lea, Freeman Roderick, 3,940,112.
Santilli, Arthur A.; Scotese, Anthony C.; and Tomarelli, Rudolph M. 2-Pyrimidinylthio)alkanoic acids, esters, amides and hydrazides. 3,940,394, Cl. 260-256.50R.
Santilli, Arthur A.; and Kim, Dong H., to American Home Products Corporation. 4-Amino-2-phenyl-6-thiopryimidines. 3,940,395, Cl. 260-256.50R.
Sargent, Frank T., to Thetford Corporation. Toilet. 3,939,501, Cl. 4-78.000.
Sargent Industries, Inc.: *See—*
Smith, Fred T., 3,940,006.
Sasabe, Yukiyoshi; and Suzuki, Kunihiko, to Nissan Motor Co., Ltd. Interlocking device for a manual power transmission system. 3,939,940, Cl. 180-82.00C.
Sasaki, Akio: *See—*
Tadokoro, Tomio; Kouno, Toshikatsu; and Sasaki, Akio, 3,940,680.
Sasaki, Hiroshi: *See—*
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Sasaki, Tatsunori. Retainer for a shoulder sling. 3,940,039, Cl. 224-5.00P.
Sasayama, Takao, to Hitachi, Ltd. Ignition apparatus for internal combustion engine. 3,939,811, Cl. 123-117.00R.
Sassmannshausen, Gunter: *See—*
Lahme, Norbert; and Sassmannshausen, Gunter, 3,940,348.
Sata, Naohide: *See—*
Kurita, Shoichi; Sata, Naohide; Ogawa, Hideki; and Hiratsuka, Yoshitaka, 3,940,705.
Sato, Akihiko, to Nippon Kogaku K. K. Light-intercepting device for cameras having focal plane shutters. 3,940,780, Cl. 354-241.000.
Sato, Hachiro, to Fukoku Kogyo Company Limited. Continuous press. 3,939,763, Cl. 100-93.00S.
Sato, Masaharu: *See—*
Inoue, Michihiro; Kimura, Takeji; and Sato, Masaharu, 3,939,750.
Sato, Nagayasu: *See—*
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Sato, Shoji, to Alps Electric Co., Ltd. AFC circuit with improved sensitivity. 3,940,714, Cl. 331-117.00R.
Sauder Industries, Inc.: *See—*
Sauder, Robert A.; Kendrick, Gary R.; and Rich, Dale, 3,940,244.
Sauder, Robert A.; Kendrick, Gary R.; and Rich, Dale, to Sauder Industries, Inc. Ceramic fiber insulation module. 3,940,244, Cl. 432-247.000.
Saurer Diederichs (Societe Anonyme): *See—*
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Sawers, James R., Jr.: *See—*
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Sawvell, Roger V.: *See—*
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Sawyer, Thomas F., to General Electric Company. Method for casting directionally solidified articles. 3,939,895, Cl. 164-60.000.
Scannell, John W.: *See—*
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Scardina, Virgil R.: *See—*
Keuper, John J.; Scardina, Virgil R.; and Wagner, Paul D., 3,940,647.
Scarnato, Thomas J. Hermetically sealable collapsible container. 3,939,887, Cl. 150-.500.
Scarnato, Thomas J. Hermetically sealable collapsible container. 3,939,888, Cl. 150-.500.
Schaad, William J., to Indak Manufacturing Corporation. Heavy duty push-button electrical switch. 3,940,585, Cl. 200-159.00R.
Schalomon, Karl-Heinz: *See—*
Heinze, Gunter; Muller, Willi; von Zimmerman, Hans Ulrich; and Schalomon, Karl-Heinz, 3,940,561.
Schapker, Richard L. Rain water run-off disperser. 3,939,616, Cl. 52-94.000.
Scheingold, William Samuel; Purdy, Harold Lawrence; and Youngfleish, Frank Christian, to AMP Incorporated. Device for connecting leadless integrated circuit package to a printed circuit board. 3,940,786, Cl. 357-74.000.
Scheinpflug, Hans: *See—*
Buchel, Karl-Heinz; Kramer, Wolfgang; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,415.
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Schepers, Georg: *See—*
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Scherbring, David J.: *See—*
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Schiemann, Wolfram. Plastic jerry can. 3,940,002, Cl. 215-1.00C.
Schirmer, Robert M., to Phillips Petroleum Company. Gas turbine combustors and method of operation. 3,939,653, Cl. 60-39.650.
Schiweck, Hubert, to Suddeutsche Zucker-Aktiengesellschaft. Treatment of hepatic coma with isomaltitol. 3,940,481, Cl. 424-180.000.
Schjeldahl, Gilmore T., to Du Pont de Nemours, E. I., and Company. Bag and package making method. 3,939,628, Cl. 53-29.000.
Schlaepfer, Hans, to Ciba-Geigy Corporation. Quaternised benzofuranyl-benzimidazoles. 3,940,417, Cl. 260-309.200.
Schlatzer, Robert K., Jr., to B. F. Goodrich Company, The. Polymerization of carboxylic acid monomers and alkyl acrylate esters in chlorofluoroethane. 3,940,351, Cl. 260-17.4SG.
Schleisner, Joseph W.: *See*—
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Schluessler, Helmut: *See*—
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Schlumberger Technology Corporation: *See*—
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Schmid, Horst: *See*—
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Schmidl, Hans, to Kronseder, Hermann. Label magazine for labeling machines. 3,940,306, Cl. 156-570.000.
Schmidt-Burbach, Gerhard: *See*—
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Schmidt, Calvin P., to Deering Milliken Research Corporation. Tire cord fabric. 3,939,893, Cl. 152-362.0CS.
Schmidt, Gerhard: *See*—
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Schmidt, Reinhard, to Westfalia Separator AG. Self-cleaning centrifuge drum. 3,940,056, Cl. 233-20.00A.
Schmidt, Robert J., to Chevron Research Company. Non-slip built-up roofing. 3,940,540, Cl. 428-332.000.
Schmidt, Robert R.: *See*—
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Schmidt, Rudolf: *See*—
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Schmits, Heinz-Herbert: *See*—
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Schmitt, Ewald: *See*—
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Schmitzer, Andreas. Device for closing and opening vacuum x-ray film holders. 3,940,629, Cl. 250-480.000.
Schneible, Seth R., to Eyelet Specialty Co., Inc. Method of making a safety closure for a container. 3,939,788, Cl. 113-121.00A.
Schneider, Gerhart: *See*—
Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, 3,940,340.
Schnell, Claude R.; Hengartner, Kurt; and Gross, Heinz, to Lonza Ltd. Arc discharge device, in particular a plasma burner. 3,940,653, Cl. 314-69.000.
Schnelle, Charles Wayne, to Tasope' Limited. Dryer unit for printing plates. 3,939,575, Cl. 34-216.000.
Schoenberger, Philip J. Match packages. 3,939,970, Cl. 206-108.000.
Scholle Corporation: *See*—
Scholle, William R., 3,940,018.
Scholle, William R., to Scholle Corporation. Combination liquid container and dispenser. 3,940,018, Cl. 222-1.000.
Scholtholt, Josef: *See*—
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Schonbrun, Leslie B.; and Schwaar, Friedrich W., to E & M Communications Corporation. Programmable toll restrictor. 3,940,569, Cl. 179-18.0DA.
Schora, Frank C.: *See*—
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Schossler, Werner: *See*—
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Schreffler, Robert Z. Electrical conductor arrangement including flexible race construction. 3,940,200, Cl. 339-8.0PB.
Schreiber, August; Schreiber, Berthold; and Schreiber, Erhard. Process for physically and biologically purifying sewage. 3,940,333, Cl. 210-17.000.
Schreiber, Berthold: *See*—
Schreiber, August; Schreiber, Berthold; and Schreiber, Erhard, 3,940,333.
Schreiber, Erhard: *See*—
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Schroeder, Roger L., to Bryant Grinder Corporation. Digital positioning system. 3,940,675, Cl. 318-603.000.
Schuler, Norman W., to Polaroid Corporation. Method of making composite light-polarizing element. 3,940,304, Cl. 156-245.000.
Schulien, Howard E.; Ficken, William H.; and Sgambati, Robert J., to Bendix Corporation, The. Accelerometer with liquid hydrostatic gimbal support. 3,939,716, Cl. 73-516.00R.
Schuller, James T.; and Okolischan, Anton, to UMC Industries, Inc. Control for a vendor including card retention means. 3,939,952, Cl. 194-4.00C.
Schultz, Herbert J. Loudspeaker having sound funnelling element. 3,940,576, Cl. 179-181.00R.
Schulz-Walz, Hansjochen: *See*—
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Schulze, Rudolf; Schumacher, Horst; and Simora, Ferdinand, to VEB Kombinat Fortschritt Landmaschinen. Crop-feed arrangement for hay baler. 3,939,630, Cl. 56-341.000.
Schumacher, Ernest W., to Virginia Chemicals Inc. Combination liquid trapping suction accumulator and evaporator pressure regulator device including a drier and thermostatic expansion valve. 3,939,669, Cl. 62-217.000.
Schumacher, Horst: *See*—
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Schwaar, Friedrich W.: *See*—
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Schwartztrauber, George H. Decoy. 3,939,591, Cl. 43-3.000.
Schwarz Services International Ltd.: *See*—
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SCM Corporation: *See*—
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Scott, William B.; and Sawvell, Roger V., to W. A. Whitney Corporation. Hydraulic punch press with ram orienting mechanism. 3,939,748, Cl. 83-639.000.
Scott, William H. Apparatus for controlling dust emissions. 3,939,881, Cl. 141-91.000.
Scuderi, Victor Anthony: *See*—
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Seki, Hideki, to Matsushita Electric Industrial Co., Ltd. Chassis device having vented base and radiation member for supporting heat sources. 3,940,665, Cl. 317-100.000.
Sekiguchi, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for controlling roll gaps of cold rolling mills. 3,940,598, Cl. 235-151.100.
Sekine, Nobuo: *See*—
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Seltzer, Samuel M.; and Dennison, Saul. Body support panel and mat made therefrom. 3,940,183, Cl. 297-453.000.
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Serad, George A., to Celanese Corporation. Polyacrylonitrile composition admixed with low boiling acetonitrile fraction and high boiling compatible plasticizer. 3,940,405, Cl. 260-29.6AN.
Sergeant, David Robert, to British Steel Corporation. Cooling of hot rolled steel stock. 3,940,294, Cl. 148-12.00B.
Sergeev, Alexandr Pavlovich: *See*—
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Shimizu, Hiromichi. Toothbrush. 3,939,522, Cl. 15-244.00R.
Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, to Matsushita Electric Industrial Co., Ltd.; and Japanese National Railways. Electrically heated alignment pad. 3,940,592, Cl. 219-548.000.
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Sillen, Rudolf Valentin; and Sjogren, Eric-Olof, to Kockums Jernverksaktiebolag. Car having plural side pouring ladles. 3,940,021, Cl. 222-129.000.
Simmons, Eugene C., to P. R. Mallory & Co., Inc. Apparatus and a method for testing the integrity of a weld. 3,940,624, Cl. 250-358.00R.
Simon-Carves Ltd.: *See—*
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Singer, Rolf Jurgen; and Jager, Gerhard, to Bayer Aktiengesellschaft. Process for the production of 2,3,4,5,6,7-hexahydrocyclopenta-(3)-1,3-oxazine-2,4-dione compounds. 3,940,390, Cl. 260-244.00R.
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Skvarenina, John A. Rotary compressor and condenser for refrigerating systems. 3,939,907, Cl. 165-86.000.
Slawinski, Sr.; Walter V. Adjustable grid line device. 3,939,564, Cl. 33-1.00K.
Smith, Alexander M., II, to Fiberwoven Corporation, The. Needled textile fabric with a thin polymeric coating thereon. 3,940,532, Cl. 428-218.000.
Smith, Charles W., Jr.; and Zimmerman, Franz, to Autoclave Engineers, Inc. Convection shield for isostatic bonding apparatus. 3,940,245, Cl. 432-249.000.
Smith, Clarence G.; and Lightfoot, Richard O., to Muskin Corporation. Apparatus for visually indicating when a pool filter is dirty. 3,939,796, Cl. 116-114.0PV.
Smith, Fred T., to Sargent Industries, Inc. Refuse hopper. 3,940,006, Cl. 220-1.00T.
Smith, John I. Four quadrant multiplying divider using three log circuits. 3,940,603, Cl. 235-195.000.
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Smith, Paul K., to Pierce Chemical Company. Compound, dithiobis-(succinimidyl propionate). 3,940,420, Cl. 260-326.260.
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Smith, Richard Glenn, to Sherwin-Williams Company, The. Glossy emulsion coating compositions containing surface treated pigments of oilophilic nature and method. 3,940,385, Cl. 260-23.70A.
Smith, Robert K.: *See—*
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Smith, Rymer H., to Wikel Manufacturing Co. Inc. Drive system. 3,940,213, Cl. 404-111.000.
Smith, Sidney H.: *See—*
Brock, George W.; Shelledy, Frank B.; Smith, Sidney H.; and Thornley, Richard F. M., 3,940,797.
Smith, Stanley K.: *See—*
Hardiman, Russell J.; and Smith, Stanley K., 3,939,920.
Smithea, Clarence O. Auxiliary retention belt and support cushion for seat of open vehicles. 3,940,166, Cl. 280-290.000.
Smitherman, Stephen N.; and Dougherty, Lemuel A., to Big Elk Wood Corporation. Apparatus for bundling firewood. 3,939,762, Cl. 100-4.000.
Smyth, Nicholas P. D., to Medtronic, Inc. Transvenous electrode. 3,939,843, Cl. 128-404.000.
Societa' Italiana Resine S.p.A.: *See—*
Console, Luciano; Bencini, Ferdinando; and Chiellini, Enzo, 3,940,368.
Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Cicognani, Enrico; Lamartina, Alfonso; and Caldarella, Riccardo, 3,940,749.
S.p.A. Ranzi Legnano: *See—*
Ranzi, Ubaldo, deceased, 3,939,731.
Societe Anonyme des Usines Chausson: *See—*
Chartet, Andre, 3,939,908.
Societe Fulmen: *See—*
Pitsch, Johann; and Lasserre, Pierre, 3,940,536.
Societe Technique de Pulverisation: *See—*
Boris, Michel, 3,940,070.
Societe Universelle de Fabrication d'Appareils Menagers S.U.F.A.M.: *See—*
Garot, Claude, 3,939,574.
Sogoian, Nash P. Hanger for vehicle mud flaps. 3,940,165, Cl. 280-154.50R.
Solar Energy Company: *See—*
Hamilton, George Henry; Turner, Robert McLean; and Ward, Jesse Lee, Jr., 3,939,818.
Solmarine S.A.: *See—*
Mazier, Georges; Geffriaud, Jean Paul; and Gouvenot, Daniel, 3,939,664.
Soltermann, Walter, to Ciba-Geigy AG. Vials emptying apparatus. 3,939,998, Cl. 214-302.000.
Sommerfeld, Eugene G., to Du Pont de Nemours, E. I., and Company. Dispersions of styrene/acrylonitrile copolymers. 3,940,361, Cl. 260-30.40N.
Sony Corporation: *See—*
Matsumoto, Isao; and Umeda, Kenkichi, 3,940,799.
Ohsawa, Mitsuo, 3,940,681.
Sumi, Takao; and Hongu, Masayuki, 3,940,708.
Tabuchi, Hideo, 3,940,800.
Sorkin, Roger. Foldable roof construction element. 3,939,615, Cl. 52-80.000.
Sortwell, Daniel Richard, III. Flavoring seafood with S-methyl methionine salt. 3,940,500, Cl. 426-535.000.
SOS Consolidated, Inc.: *See—*
Feterl, Leon G., 3,939,553.
Sound Technology, Inc.: *See—*
Lum, Jack G. S., 3,940,715.
Space Research Corporation: *See—*
Jenkins, Dennis H.; and Palacio, Luis, 3,939,773.
Spanke, Friedhelm: *See—*
Krause, Wolfgang; and Spanke, Friedhelm, 3,940,781.
Spann, Donald C. Restraining cuff. 3,939,829, Cl. 128-133.000.
Spanondis, Michael E. Dental flosser. 3,939,853, Cl. 132-91.000.
Sparks, Alton N.: *See—*
Harrell, Edsel A.; Sparks, Alton N.; Perkins, William D.; and Hare, Woodrow W., 3,939,883.
Sparlin, Derry D.; and Wahl, Harry A., to Continental Oil Company. Method for reducing the production of water from oil wells. 3,939,912, Cl. 166-295.000.
Sparlin, Derry D.; Fertl, Walter H.; and Young, Gary C., to Continental Oil Company. Method for detecting and locating water-producing zones and/or water thief zones in subterranean formations. 3,940,612, Cl. 250-260.000.
Spector, Donald. Inflatable terrarium assembly. 3,939,607, Cl. 47-34.00T.
Spectral Dynamics Corporation of San Diego: *See—*
Davis, Robert D., 3,939,715.
Spencer, John Roger: *See—*
Alexander, Michael Richard; Duncan, Edward; McClements, Kenneth; and Spencer, John Roger, 3,940,600.
Sperry Rand Corporation: *See—*
Blanshine, Allison W., 3,939,631.
Erspamer, James R., 3,939,572.
Matthews, Hugh B., 3,939,659.
Perahia, Avraham, 3,940,636.
Price, Robert; and Craig, John W., 3,940,694.
Straeter, James E., 3,939,847.
Spevack, Jerome S., to Deuterium Corporation. Thermal control in dual temperature systems. 3,940,473, Cl. 423-580.000.
Spierer, Edward D.: *See—*
Suhr, Peter J.; and Spierer, Edward D., 3,940,690.
Spivack, Mark A.: *See—*
Loeb, William E.; and Spivack, Mark A., 3,940,530.
Spivey, Donald K. Engine starter and bracket. 3,939,815, Cl. 123-185.0BA.
Sprague Electric Company: *See—*
Genesi, Robert C., 3,940,785.
Squires, Wayne H. Inspection tool or device. 3,939,569, Cl. 33-174.00L.
Stahler, Alfred F.: *See—*
Kayan, Helmut L.; and Stahler, Alfred F., 3,940,791.
Stahlhut, Frederick O.: *See—*
Olsen, Robert C.; and Stahlhut, Frederick O., 3,940,768.
Stal-Refrigeration AB: *See—*
Lundvik, Bertil; and Johansson, Nils-Arne, 3,939,867.
Stallabrass, James R.; Ringer, T. Rayman; Bailey, Donald L.; and Hearty, Patrick F., to Canadian Patents & Development Limited. Icing detector. 3,940,622, Cl. 250-338.000.
Stamicarbon B.V.: *See—*
de Rooij, Abraham H., 3,940,442.
Stamou, Sam. Holder for typewriter paper. 3,939,956, Cl. 197-133.00R.
Standard Oil Company: *See—*
Steigelmann, Edward F.; Hughes, Robert D.; and Gabor, Joseph, 3,940,469.
Standard Pressed Steel Co.: *See—*
Hardiman, Russell J.; and Smith, Stanley K., 3,939,920.
Stanev, Tzvyatko Penchev; and Lambiev, Adrian Kostov, to DSO "Bulgarski Darjavni Jeleznitzi". Method and apparatus for impact testing railroad cars. 3,939,691, Cl. 73-11.000.
Stanford Research Institute: *See—*
Fujiwara, Allan N.; Acton, Edward M.; and Henry, David W., 3,940,383.
Stanislaw, Peter: *See—*
Kreeft, John; Stanislaw, Peter; and Gulbrandsen, Rudolph G., 3,939,537.
Stansbury, Benjamin H., Jr.: *See—*
Miller, Marshall W.; Vanden Broek, Christiaan J. H.; Stansbury, Benjamin H., Jr.; Jamison, Thomas H.; McHose, Charles W.; and Dubson, Paul T., 3,939,500.
Staples, Robert E., to Mount Hope Machinery Company. Adjustable-bow bar or roll axle. 3,940,043, Cl. 226-192.000.
Statkov, Peter Radanov: *See—*
Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.
Stearns, James B.; and Schmerling, Donald W., to ESAB Manufacturing, Inc. Electric arc welding. 3,940,586, Cl. 219-75.000.
Steele, Daniel, to Imperial Chemical Industries Limited. Fuse cord. 3,939,941, Cl. 181-116.000.
Steels, Gordon, to Baker Perkins Holdings Limited. Apparatus for the manufacture of confectionery made of plural materials. 3,940,218, Cl. 425-112.000.
Stegens, Ronald E., to Communications Satellite Corporation (Comsat). Microwave transistor amplifier. 3,940,706, Cl. 330-21.000.
Steigelmann, Edward F.; Hughes, Robert D.; and Gabor, Joseph, to Standard Oil Company. Process for forming hollow fibers. 3,940,469, Cl. 264-177.00F.
Steigerwald, Robert L., to General Electric Company. GTO turn-off circuit providing turn-off gate current pulse proportional to anode current. 3,940,633, Cl. 307-252.00C.
Steigerwald, Robert L.: *See—*
Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., 3,940,682.
Steinmeier, David W., II: *See—*
Laub, Joseph L.; and Steinmeier, David W., II, 3,940,047.
Steinwart, Johannes: *See—*
Ruf, Max; and Steinwart, Johannes, 3,939,655.
Stenberg, Folke Gustav Adolf, to IWEMA Forpackning AB. Tool for interconnecting sheet webs by welding. 3,940,305, Cl. 156-515.000.
Stenger, M. Antoine; Cousse, Henri; and Mouzin, M. Gilbert, to Pierre Fabre S.A. Medicaments having psychotropic properties. 3,940,490, Cl. 424-230.000.
Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, to Allied Chemical Corporation. Vehicle sensitive retractor with bell inertia mechanism. 3,940,083, Cl. 242-107.40A.
Sterling Drug Inc.: *See—*
Surrey, Alexander R., 3,940,441.
Sterling Hydraulics Limited: *See—*
Clarke, Peter G.; and Rayner, Bernard P., 3,939,869.
Stettler, Martin C.: *See—*
Kress, Robert W.; and Stettler, Martin C., 3,940,094.
Steven, Josef, to Siemens Aktiengesellschaft. Device for detecting defective nuclear reactor fuel rods. 3,940,313, Cl. 176-68.000.
Stevens, Donald, to Assembly Machines, Inc. Assembly machine having improved tooling mounting. 3,939,544, Cl. 29-208.00F.
Stevens, Donald S., to Assembly Machines, Inc. Assembly machine actuator. 3,939,545, Cl. 29-208.00F.
Sthare, Derwin; and Chambers, Richard F., to GAF Corporation. Dye migration control with amine salt of poly(vinyl methyl ether/maleic acid). 3,940,247, Cl. 8-172.00R.
Stilkenbaumer, Herbert: *See—*
Rothert, Klaus-Dieter; Stilkenbaumer, Herbert; Fischer, Gudrun; Madler, Armin; and Ross, Ulrich, 3,939,710.
Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., to Stock Equipment Company. Apparatus and process for handling dangerous fluent material. 3,940,628, Cl. 250-435.000.
Stock Equipment Company: *See—*
Christofer, Donald E., 3,940,577.

Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,940,628.

Stock, Malcolm D. Apparatus for making ice cubes or the like. 3,940,232, Cl. 425-447.000.

Stocker, Harold L., to General Motors Corporation. Labyrinth seal. 3,940,153, Cl. 277-57.000.

Stoll, Max: *See—*
Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,940,502.

Stookey, Stanley D.: *See—*
Pierson, Joseph E.; and Stookey, Stanley D., 3,940,277.

Stopek, Benjamin: *See—*
Hinz, Henry; and Stopek, Benjamin, 3,940,142.

Stoquelet, Michel R. A. Reel for a cable. 3,940,086, Cl. 242-118.600.

Storz-Endoskop GmbH: *See—*
Storz, Karl, 3,939,840.

Storz, Karl, to Storz-Endoskop GmbH. Operation endoscope. 3,939,840, Cl. 128-303.150.

Stovall, William R. An improved power converter apparatus. 3,939,719, Cl. 74-128.000.

Straeter, James E., to Sperry Rand Corporation. Combine with improved feed plate. 3,939,847, Cl. 130-27.00T.

Strait, Douglas Howard: *See—*
Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, 3,939,579.

Straits Steel & Wire Co.: *See—*
King, Clarence J., 3,939,980.
King, Clarence J., 3,939,981.

Strassberger, Werner, to Hoechst Aktiengesellschaft. Isomerization of C_{10}-C_{70} olefins of vinylidene structure to olefins of vinyl structure. 3,940,452, Cl. 260-683.200.

Strasser, Georg J. Expansible mandrel. 3,940,227, Cl. 425-392.000.

Stratton, Donald W., to Anderson Company, The. Locking plate for adjustable arms. 3,939,525, Cl. 15-250.350.

Straumann, Danielle: *See—*
Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.

Strauss, Heinz: *See—*
Jung, Anton Ladislaus; Lapczyna, Manfred; Mows, Peter; Schmidt-Burbach, Gerhard; and Strauss, Heinz, 3,939,765.

Straw, Raymond L.; and Wilson, Larry R., to Caterpillar Tractor Co. Method of manufacturing an open cellular article. 3,940,301, Cl. 156-155.000.

Streck Laboratories, Inc.: *See—*
McClurg, James E., 3,940,249.

Stromberg, Jan Erling Gunnar, to AB Volvo. Arrangement for controlling gear changes in a motor vehicle gear box. 3,939,722, Cl. 74-336.000.

Strong, Jerry G.; and Napier, Roger P., to Mobil Oil Corporation. 1-Carbamoyl vinyl phosphates. 3,940,458, Cl. 260-943.000.

Stubits, Marcella C.: *See—*
Teng, James; Dai, Frank; and Stubits, Marcella C., 3,940,384.

Studdard, James F., to West Tech Systems, Inc. Method and apparatus for aiming aircraft visual approach slope indicator. 3,939,571, Cl. 33-180.00R.

Studiecentrum Voor Kernenergie, "S.C.K.": *See—*
Van Lierde, Walter Jan, 3,940,312.

Stupin, Joseph M., Jr.: *See—*
Bowler, Edward F., Jr.; Stupin, Joseph M., Jr.; and Williams, Edward G., 3,940,518.

Suda, Minoru. Antifriction bearing for sliding members. 3,940,187, Cl. 308-6.00C.

Suddeutsche Zucker-Aktiengesellschaft: *See—*
Schiweck, Hubert, 3,940,481.

Suenaga, Eiichi; Tachibana, Shinro; and Sato, Nagayasu, to Eisai Co., Ltd. Process for production of stabilized powdery secretin preparation by lyophilization. 3,940,480, Cl. 424-177.000.

Suhr, Peter J.; and Spierer, Edward D., to Magnetic Analysis Corporation. Multi-probe flux leakage testing apparatus using skewed probes. 3,940,690, Cl. 324-37.000.

Sulzer Brothers Limited: *See—*
Demuth, Hans, 3,939,877.
Pfarrwaller, Erwin, 3,939,878.

Sumi, Takao; and Hongu, Masayuki, to Sony Corporation. Gain control circuit. 3,940,708, Cl. 330-29.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Kato, Akinori; and Yamamura, Kenji, 3,940,332.

Sundelius, Dennis J.: *See—*
Ware, Lyle A.; Sundelius, Dennis J.; and Melquist, Marlin R., 3,940,065.

Superior Industries, Inc.: *See—*
Allred, Michael V., 3,940,658.

Surrey, Alexander R., to Sterling Drug Inc. N,N′-bisphenoxybenzyl-bridged-diamides. 3,940,441, Cl. 260-562.00B.

Susset, Dieter A., to TRW Inc. Reframing method for a carrier system having a serial digital data bit stream. 3,940,563, Cl. 179-15.0BS.

Sutton, Clifton C.: *See—*
Miller, David C.; and Sutton, Clifton C., 3,939,969.

Sutures, Inc.: *See—*
Kurtz, Leonard D., 3,940,478.

Suzaki, Hidenori: *See—*
Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.

Suzuki, Junichi; Matsuda, Toru; and Katsube, Takahiro, to Shatai Kogiyo Co. Ltd. Device and method of grinding metallic molds and products automatically. 3,939,610, Cl. 51-56.00R.

Suzuki, Kunihiko: *See—*
Sasabe, Yukiyoshi; and Suzuki, Kunihiko, 3,939,940.

Suzzi, Gianoberto, to Riva Calzoni S.p.A. Stacking apparatus. 3,939,994, Cl. 214-6.00M.

Sweden Freezer Manufacturing Co.: *See—*
Halverson, Maynard L., 3,939,667.

Swenson, William J., to Raymond International, Inc. Hydraulic hammer assembly. 3,939,922, Cl. 173-125.000.

SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH: *See—*
Buhl, Harro; Erdelitsch, Herbert; Machalitzky, Otto; and Seitter, Wolf, 3,940,579.
Door, Helmut, 3,940,581.

Swick, Edwin Grant: *See—*
Andersen, Stephen Verner; and Swick, Edwin Grant, 3,940,198.

Swinford, Gary D.: *See—*
Verlinden, Jerry M.; Swinford, Gary D.; DeJaeger, Kyle L.; and Kennedy, Michael W., 3,940,116.

Symons, Philip C., to Energy Development Associates. Halogen hydrates. 3,940,283, Cl. 136-6.00E.

Syntex (U.S.A.) Inc.: *See—*
Muchowski, Joseph M.; and Fried, John H., 3,940,407.

Szabo, Andras I.: *See—*
Zitelli, William E.; and Szabo, Andras I., 3,940,759.

Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, to Cermol S.A. Substituted cinnamoyl-piperazine-pyridyl compound. 3,940,386, Cl. 260-240.00K.

Szeles, Julius. Truck box. 3,940,009, Cl. 220-20.000.

Szenczy, George, to Lipe Rollway Corporation. Orienter for square cylinders. 3,939,966, Cl. 198-240.000.

Tabor, Hanani, to Amiad Systems Limited. Linear hydraulic motor. 3,939,755, Cl. 91-224.000.

Tabuchi, Hideo, to Sony Corporation. Mode selecting device having a time delay between selection and establishment of an operating mode for tape recording and/or recording apparatus. 3,940,800, Cl. 360-137.000.

Tachibana, Shinro: *See—*
Suenaga, Eiichi; Tachibana, Shinro; and Sato, Nagayasu, 3,940,480.

Tadiran Israel Electronics Industries Ltd.: *See—*
Orbach, Shelomo, 3,940,564.

Tadokoro, Tomio; Kouno, Toshikatsu; and Sasaki, Akio, to Hitachi, Ltd. A.C. - D.C. power converter for D.C. load. 3,940,680, Cl. 321-27.00R.

Takagi, Mikio; Kamioka, Hajime; Nakayama, Kazufumi; and Shimoda, Haruo, to Fujitsu Limited. Method of making a semiconductor device. 3,940,288, Cl. 148-1.500.

Takahara, Akira: *See—*
Kanatsu, Shinsaku; and Takahara, Akira, 3,940,541.

Takahashi, Akira: *See—*
Kojima, Yasuaki; Shinozaki, Takayoshi; and Takahashi, Akira, 3,940,721.

Takahashi, Shigeo: *See—*
Yamaguchi, Hideo; Kawasaki, Takashi; Takahashi, Shigeo; and Inubuse, Akiyoshi, 3,940,248.

Takahashi, Yasuie; and Tsuzuki, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automotive vehicle shift control mechanism for manual transmissions. 3,939,724, Cl. 74-476.000.

Takaoka, Kentaro. Atomizing equipments for anesthetic liquid compounds. 3,940,064, Cl. 239-74.000.

Takasaki, Shuhei; and Goto, Yasumoto, to Osaka Prefectural Government; and Goto Drop Forging Co., Ltd. Vibration-isolated foundation which utilizes buoyancy. 3,940,098, Cl. 248-20.000.

Takashima, Shunichi: *See—*
Chimura, Kazuya; Kaneko, Takashi; Takashima, Shunichi; Kawashima, Masao; and Nakazono, Ryuichi, 3,940,543.

Takeuchi, Masaharu: *See—*
Noritake, Muneo; and Takeuchi, Masaharu, 3,940,240.

Takita, Ryoichi, to Rhythm Watch Co. Ltd. Small-sized synchronous motor. 3,940,645, Cl. 310-156.000.

Talbert, Miles E.: *See—*
Hall, Ervin T.; Talbert, Miles E.; Walsh, James R.; and Hinkle, Max E., 3,939,508.

Tamura, Takeo, to Nissan Motor Co., Ltd. Seat position control mechanism having a position memory element. 3,940,182, Cl. 297-341.000.

Tanaka, Kozo; and Onoda, Tetsuyuki, to Honeywell Inc. Linear output bridge circuit. 3,940,686, Cl. 323-75.00B.

Tanaka, Susumu; Enoguchi, Yuji; and Kawabata, Hidetoshi, to Minolta Camera Kabushiki Kaisha. Magnetic brush developing apparatus. 3,939,801/Cl. 118-637.000.

Tanaka, Yoshimasa: *See—*
Nishida, Kazumori; Kawahashi, Toshinori; and Tanaka, Yoshimasa, 3,939,950.

Tanamachi, Tokunosuke: *See—*
Tsuboi, Takashi; and Tanamachi, Tokunosuke, 3,940,669.

Taniguchi, Toshinori: *See—*
Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, 3,939,634.

Tanikoshi, Kinji, to Canon Kabushiki Kaisha. Speed control apparatus for a D.C. motor having hall generators. 3,940,670, Cl. 318-254.000.

Tasope' Limited: *See—*
Schnelle, Charles Wayne, 3,939,575.

Tate, Jack F.: *See—*
Maddox, Jim, Jr.; and Tate, Jack F., 3,939,911.
Taylor, Cecil R. Pole vaulting game apparatus. 3,940,137, Cl. 273-85.00C.
Taylor, Glenn N., to Kendall Company, The. Disposable diaper with fit improving means. 3,939,837, Cl. 128-287.000.
Tech Systems Corporation: *See—*
Vilkaitis, Hugo L., 3,940,718.
Tecnologia Aplicada S.A.: *See—*
Wallstein, Enrique Klien, 3,939,728.
Teeters, Lloyd L. Electric lock. 3,940,738, Cl. 340-147.0MD.
Teisen, Mogens Roesdahl Groth, to Havera Development Ltd. Power transmitting mechanism for reciprocating engines or pumps. 3,939,717, Cl. 74-60.000.
Tele-Assemblies: *See—*
Goudikian, Edward, 3,940,570.
Telefonaktiebolaget L M Ericsson: *See—*
Jeppsson, Martin Wilhelm Ivan; Lindstrom, Bruce William; and Russell, David John, 3,940,566.
Thyselius, Per-Olof, 3,940,562.
Telephone & Data Products, Inc.: *See—*
Quimet, Donald J., 3,940,739.
Telex Computer Products, Inc.: *See—*
Pembroke, Richard W., 3,940,090.
Tellie, Paul E. Firearms with forestock. 3,939,589, Cl. 42-71.00R.
Teng, James; Dai, Frank; and Stubits, Marcella C., to Anheuser-Busch, Incorporated. Methyl hydroxypropyl cellulose acetate and process. 3,940,384, Cl. 260-226.000.
Tenney, Kenneth S.; and Tomo, Daniel, to National Distillers and Chemical Corporation. Containers for projectiles. 3,939,967, Cl. 206-3.000.
Terasaki Denki Sangyo Kabushiki Kaisha: *See—*
Horikawa, Masao, 3,940,723.
Terawaki, Kinji: *See—*
Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.
Terayama, Toshio. Thin quartz oscillator with support of leads. 3,940,638, Cl. 310-9.400.
Texaco Inc.: *See—*
Arnold, Dan M., 3,940,611.
Lee, Kung-You, 3,940,450.
Maddox, Jim, Jr.; and Tate, Jack F., 3,939,911.
Paap, Hans J., 3,940,613.
Waldbillig, James O., 3,940,408.
Waldbillig, James O., 3,940,409.
Texas Instruments Incorporated: *See—*
Adams, Anthony L., 3,940,243.
Blum, Clement J., 3,940,734.
Kuo, Chang-Kiang; and Kitagawa, Norishisa, 3,940,747.
Morton, Dale E., 3,939,798.
Ting, Youn H., 3,940,591.
Textron, Inc.: *See—*
Bernier, Lornie J.; and Das, Tapan K., 3,939,547.
Brandwein, Rowland; and Gupta, Mohan L., 3,940,679.
Tezuka, Toshiyata; Kawakami, Hiroshi; and Miura, Katsutoshi, to Bridgestone Tire Company, Ltd. Oil fence having directional control device. 3,939,663, Cl. 61-1.00F.
Thayer, Charles V.: *See—*
Mitchell, William A.; and Thayer, Charles V., 3,939,944.
Therm-O-Disc Incorporated: *See—*
Place, Donald E., 3,940,729.
Thermo-Couple Products Company, Inc.: *See—*
Finney, Philip F., 3,939,554.
Thetford Corporation: *See—*
Miller, Marshall W.; Vanden Broek, Christiaan J. H.; Stansbury, Benjamin H., Jr.; Jamison, Thomas H.; McHose, Charles W.; and Dubson, Paul T., 3,939,500.
Sargent, Frank T., 3,939,501.
Theurer, Josef; and Riessberger, Klaus, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Apparatus for bonding together pieces of track ballast. 3,939,774, Cl. 104-11.000.
Thevenaz, Jean, to Bolex International SA. Projection cassette. 3,939,975, Cl. 206-387.000.
Thibaut, Yves Albert Daniel, to U.S. Philips Corporation. Device for preventing unbalance in washing machines during spindrying. 3,939,673, Cl. 68-12.00R.
Thiokol Corporation: *See—*
Fishman, Bernard, 3,940,031.
Gershon, Milton, 3,940,032.
Horvath, William, 3,940,029.
Thomas, Martha J. B.; Fowler, Richard A.; and Larson, Robert C., to GTE Sylvania Incorporated. Method of coating cathode heaters. 3,940,326, Cl. 204-181.000.
Thomas, Vaselios H.; and Pohto, Gerald R., to Electronor Corporation. Reconstructed or repaired electrode structure. 3,940,328, Cl. 204-283.000.
Thomasville Products, Inc.: *See—*
Hall, Ervin T.; Talbert, Miles E.; Walsh, James R.; and Hinkle, Max E., 3,939,508.
Thomaswick, Ronald J., to PPG Industries, Inc. Flat glass shipping container. 3,939,978, Cl. 206-454.000.
Thompson, John T.: *See—*
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Thurston, Walter; and Kerrigan, William. Male screw-forming members. 3,939,512, Cl. 10-10.00R.
Thyselius, Per-Olof, to Telefonaktiebolaget L M Ericsson. Transit exchange for time division multiplex asynchronous data. 3,940,562, Cl. 179-15.0BA.
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Tipton, Larry J.; Rebmann, Donald A.; and Reise, Donald A., to ACF Industries, Incorporated. Means and method for securing a metering rod lifter cam on a throttle shaft of a carburetor. 3,940,459, Cl. 261-23.00A.
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Ueda, Atsumi; and Kobashi, Uichiro, to Aisin Seiki Kabushiki Kaisha. Unloader valve with flow divider. 3,939,859, Cl. 137-118.000.
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van Geffen, Johannes Adrianus. Piercing tools. 3,939,683, Cl. 72-71.000.
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Walker, Brooks. Engine speed responsive means for changing the position of a vacuum spark advance limiter stop. 3,939,810, Cl. 123-117.00A.
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Wallestad, Victor C., to Fluoroware, Inc. Wafer basket and easily attached and detached carrier for same. 3,939,973, Cl. 206-328.000.
Wallstein, Enrique Klien, to Tecnologia Aplicada S.A. Double leverfulcrum control device for controlling the opening and closing of a fluid valve. 3,939,728, Cl. 74-519.000.
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Waltz, Allen R., to United States of America, Navy. Deep sea pressure compensated expendable energy source. 3,940,286, Cl. 136-100.00R.
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Zeiler A.G. Werk Koniz: *See—*
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Zelenko, Gennady Samuilovich: *See—*
Jurovsky, Albert Yakovlevich; Zelenko, Gennady Samuilovich; and Brodkin, Jury Markovich, 3,939,712.
Zelenov, Jury Ivanovich: *See—*
Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.
Zetterstrom, Karl Axel, to Volvo Flygmotor Aktiebolag. Device for the purification of process waste gases. 3,940,253, Cl. 23-277.00C.
Zimmerman, Franz: *See—*
Smith, Charles W., Jr.; and Zimmerman, Franz, 3,940,245.
Zin-Plas Corporation: *See—*
Nelson, Merritt J., 3,939,865.
Zink, John Smith: *See—*
Reed, Robert D.; Zink, John Smith; and Goodnight, Hershel E., 3,940,234.
Zink, Julius, to J. Zink Co., Inc. Filter changing valve unit. 3,940,222, Cl. 425-199.000.
Zipin, Richard B., to Bendix Corporation, The. Multi-axis load cell. 3,939,704, Cl. 73-133.00R.
Zipperer, Manfred. Emulsifying and dispersing apparatus. 3,940,115, Cl. 259-7.000.
Zitelli, William E.; and Szabo, Andras I., to Westinghouse Electric Corporation. Analog signal processing system with correction for amplifier offset. 3,940,759, Cl. 340-347.0AD.
Zlotoff, Howard J.: *See—*
Mohr, Robert N.; and Zlotoff, Howard J., 3,939,828.
Zoecon Corporation: *See—*
Henrick, Clive A.; and Siddall, John B., 3,940,444.
Zook, Donald G.; Miller, Kenneth J.; and Patton, Eugene K., to Caterpillar Tractor Co. Method of vacuum pressure fill of viscous dampers. 3,939,880, Cl. 141-1.00R.
Zozulya, Raisa Andreevna: *See—*
Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
Zuech, Ernest A., to Phillips Petroleum Company. Supported molybdenum or tungsten oxides treated with organoaluminum compounds as catalysts. 3,940,346, Cl. 252-430.000.

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 24,017	3,914,140	Oct. 21, 1975	B 289,471	3,917,184	Nov. 4, 1975
B 24,018	3,914,206	Oct. 21, 1975	B 289,523	3,921,166	Nov. 18, 1975
B 64,868	3,914,141	Oct. 21, 1975	B 289,883	3,925,063	Dec. 9, 1975
B 78,331	3,914,142	Oct. 21, 1975	B 290,328	3,924,838	Dec. 9, 1975
B 112,422	3,913,484	Oct. 21, 1975	B 291,104	3,925,007	Dec. 9, 1975
B 150,560	3,913,654	Oct. 21, 1975	B 291,694	3,925,339	Dec. 9, 1975
B 176,995	3,915,773	Oct. 28, 1975	B 292,054	3,915,877	Oct. 28, 1975
B 189,772	3,925,367	Dec. 9, 1975	B 292,126	3,914,465	Oct. 21, 1975
B 189,773	3,925,405	Dec. 9, 1975	B 292,140	3,914,340	Oct. 21, 1975
B 190,679	3,925,346	Dec. 9, 1975	B 292,300	3,927,167	Dec. 16, 1975
B 198,810	3,916,043	Oct. 28, 1975	B 292,563	3,923,653	Dec. 2, 1975
B 204,161	3,924,605	Dec. 9, 1975	B 293,378	3,923,725	Dec. 2, 1975
B 207,272	3,914,123	Oct. 21, 1975	B 293,437	3,913,414	Oct. 21, 1975
B 211,786	3,914,300	Oct. 21, 1975	B 294,103	3,924,396	Dec. 9, 1975
B 213,211	3,925,269	Dec. 9, 1975	B 294,579	3,916,737	Nov. 4, 1975
B 220,683	3,914,471	Oct. 21, 1975	B 294,673	3,916,023	Oct. 28, 1975
B 222,188	3,914,739	Oct. 21, 1975	B 295,481	3,921,593	Nov. 25, 1975
B 223,621	3,925,526	Dec. 9, 1975	B 295,674	3,916,107	Oct. 28, 1975
B 224,323	3,925,476	Dec. 9, 1975	B 295,860	3,923,880	Dec. 2, 1975
B 233,383	3,925,424	Dec. 9, 1975	B 299,267	3,917,106	Nov. 4, 1975
B 233,741	3,925,326	Dec. 9, 1975	B 300,353	3,921,734	Nov. 25, 1975
B 235,011	3,925,086	Dec. 9, 1975	B 302,271	3,929,130	Dec. 30, 1975
B 235,925	3,924,949	Dec. 9, 1975	B 302,692	3,924,598	Dec. 9, 1975
B 236,609	3,925,187	Dec. 9, 1975	B 302,836	3,923,573	Dec. 2, 1975
B 237,953	3,924,051	Dec. 2, 1975	B 302,998	3,928,233	Dec. 23, 1975
B 239,289	3,922,711	Nov. 25, 1975	B 303,011	3,930,188	Dec. 30, 1975
B 241,433	3,923,711	Dec. 2, 1975	B 303,655	3,924,642	Dec. 9, 1975
B 245,194	3,919,179	Nov. 11, 1975	B 303,702	3,914,131	Oct. 21, 1975
B 248,916	3,920,862	Nov. 18, 1975	B 304,687	3,924,783	Dec. 9, 1975
B 251,109	3,914,148	Oct. 21, 1975	B 305,417	3,915,882	Oct. 28, 1975
B 251,635	3,914,149	Oct. 21, 1975	B 305,868	3,921,463	Nov. 25, 1975
B 252,947	3,923,803	Dec. 2, 1975	B 305,881	3,923,478	Dec. 2, 1975
B 254,211	3,917,677	Nov. 4, 1975	B 306,829	3,925,411	Dec. 9, 1975
B 254,708	3,923,878	Dec. 2, 1975	B 306,938	3,916,050	Oct. 28, 1975
B 255,756	3,923,781	Dec. 2, 1975	B 307,677	3,915,276	Oct. 28, 1975
B 256,334	3,924,988	Dec. 9, 1975	B 308,661	3,924,349	Dec. 9, 1975
B 256,936	3,925,513	Dec. 9, 1975	B 308,892	3,919,624	Nov. 11, 1975
B 258,687	3,914,221	Oct. 21, 1975	B 309,207	3,914,743	Oct. 21, 1975
B 259,236	3,924,874	Dec. 9, 1975	B 309,499	3,922,002	Nov. 25, 1975
B 259,274	3,928,688	Dec. 23, 1975	B 309,681	3,927,374	Dec. 16, 1975
B 260,455	3,925,634	Dec. 9, 1975	B 309,755	3,919,468	Nov. 11, 1975
B 260,945	3,925,250	Dec. 9, 1975	B 309,756	3,914,136	Oct. 21, 1975
B 261,378	3,913,468	Oct. 21, 1975	B 309,860	3,922,485	Nov. 25, 1975
B 261,828	3,925,551	Dec. 9, 1975	B 310,149	3,924,705	Dec. 9, 1975
B 262,241	3,925,528	Dec. 9, 1975	B 310,271	3,923,689	Dec. 2, 1975
B 262,287	3,921,209	Nov. 18, 1975	B 311,313	3,925,142	Dec. 9, 1975
B 262,378	3,914,410	Oct. 21, 1975	B 311,317	3,918,975	Nov. 11, 1975
B 264,257	3,928,665	Dec. 23, 1975	B 311,413	3,925,515	Dec. 9, 1975
B 264,833	3,923,566	Dec. 2, 1975	B 311,910	3,924,357	Dec. 9, 1975
B 265,369	3,925,245	Dec. 9, 1975	B 311,911	3,925,233	Dec. 9, 1975
B 265,727	3,914,479	Oct. 21, 1975	B 312,139	3,925,530	Dec. 9, 1975
B 265,862	3,915,915	Oct. 28, 1975	B 312,477	3,923,714	Dec. 2, 1975
B 266,195	3,923,599	Dec. 2, 1975	B 313,098	3,925,045	Dec. 9, 1975
B 269,673	3,914,377	Oct. 21, 1975	B 313,531	3,925,548	Dec. 9, 1975
B 270,089	3,923,875	Dec. 2, 1975	B 313,594	3,924,626	Dec. 9, 1975
B 271,104	3,925,400	Dec. 9, 1975	B 313,900	3,915,932	Oct. 28, 1975
B 274,945	3,924,992	Dec. 9, 1975	B 314,049	3,920,588	Nov. 18, 1975
B 275,426	3,925,168	Dec. 9, 1975	B 314,255	3,923,764	Dec. 2, 1975
B 276,271	3,916,028	Oct. 28, 1975	B 314,271	3,921,845	Nov. 25, 1975
B 276,560	3,916,030	Oct. 28, 1975	B 314,489	3,925,016	Dec. 9, 1975
B 277,449	3,924,048	Dec. 2, 1975	B 314,800	3,930,087	Dec. 30, 1975
B 278,491	3,921,170	Nov. 18, 1975	B 314,977	3,923,459	Dec. 2, 1975
B 278,991	3,914,469	Oct. 21, 1975	B 315,363	3,920,673	Nov. 18, 1975
B 279,583	3,923,749	Dec. 2, 1975	B 315,397	3,923,963	Dec. 2, 1975
B 280,015	3,925,378	Dec. 9, 1975	B 315,731	3,914,108	Oct. 21, 1975
B 280,395	3,919,604	Nov. 11, 1975	B 316,014	3,920,861	Nov. 18, 1975
B 281,341	3,920,643	Nov. 18, 1975	B 316,239	3,913,546	Oct. 21, 1975
B 281,943	3,924,013	Dec. 2, 1975	B 316,917	3,925,494	Dec. 9, 1975
B 282,081	3,913,483	Oct. 21, 1975	B 317,080	3,925,324	Dec. 9, 1975
B 282,252	3,924,997	Dec. 9, 1975	B 317,347	3,923,552	Dec. 2, 1975
B 283,124	3,923,512	Dec. 2, 1975	B 317,624	3,925,167	Dec. 9, 1975
B 283,300	3,925,011	Dec. 9, 1975	B 318,195	3,915,699	Oct. 28, 1975
B 284,297	3,913,722	Oct. 21, 1975	B 318,618	3,915,365	Oct. 28, 1975
B 285,200	3,923,680	Dec. 2, 1975	B 318,640	3,925,186	Dec. 9, 1975
B 285,796	3,914,303	Oct. 21, 1975	B 318,745	3,916,571	Nov. 4, 1975
B 286,499	3,914,129	Oct. 21, 1975	B 319,226	3,925,082	Dec. 9, 1975
B 286,614	3,924,696	Dec. 9, 1975	B 319,339	3,916,056	Oct. 28, 1975
B 286,913	3,928,696	Dec. 23, 1975	B 319,402	3,919,568	Nov. 11, 1975
B 287,164	3,914,139	Oct. 21, 1975	B 319,414	3,928,666	Dec. 23, 1975
B 287,270	3,924,825	Dec. 9, 1975	B 320,261	3,924,033	Dec. 2, 1975
B 287,275	3,925,141	Dec. 9, 1975	B 320,452	3,925,083	Dec. 9, 1975
B 287,373	3,918,568	Nov. 11, 1975	B 320,603	3,915,571	Oct. 28, 1975
B 288,018	3,925,239	Dec. 9, 1975	B 321,018	3,921,623	Nov. 25, 1975
B 288,627	3,916,179	Oct. 28, 1975	B 321,101	3,917,163	Nov. 4, 1975
B 288,638	3,925,132	Dec. 9, 1975	B 321,938	3,923,889	Dec. 2, 1975
B 289,175	3,924,309	Dec. 9, 1975	B 322,182	3,925,390	Dec. 9, 1975

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 322,239	3,920,973	Nov. 18, 1975	B 346,613	3,923,545	Dec. 2, 1975
B 322,564	3,914,373	Oct. 21, 1975	B 346,901	3,915,583	Oct. 28, 1975
B 322,611	3,920,863	Nov. 18, 1975	B 348,083	3,923,774	Dec. 2, 1975
B 322,777	3,924,382	Dec. 9, 1975	B 348,383	3,923,452	Dec. 2, 1975
B 323,127	3,923,967	Dec. 2, 1975	B 348,495	3,914,654	Oct. 21, 1975
B 323,191	3,914,566	Oct. 21, 1975	B 348,558	3,914,109	Oct. 21, 1975
B 323,203	3,916,165	Oct. 28, 1975	B 349,141	3,915,363	Oct. 28, 1975
B 323,568	3,920,536	Nov. 18, 1975	B 349,177	3,914,033	Oct. 21, 1975
B 323,666	3,924,568	Dec. 9, 1975	B 349,231	3,915,831	Oct. 28, 1975
B 324,495	3,928,664	Dec. 23, 1975	B 349,321	3,916,103	Oct. 28, 1975
B 324,503	3,928,524	Dec. 23, 1975	B 349,948	3,914,557	Oct. 21, 1975
B 324,505	3,925,294	Dec. 9, 1975	B 350,025	3,927,415	Dec. 16, 1975
B 324,739	3,924,990	Dec. 9, 1975	B 350,143	3,924,419	Dec. 9, 1975
B 324,879	3,923,538	Dec. 2, 1975	B 350,219	3,917,802	Nov. 4, 1975
B 325,102	3,924,355	Dec. 9, 1975	B 350,245	3,914,331	Oct. 21, 1975
B 325,262	3,921,304	Nov. 25, 1975	B 350,523	3,924,726	Dec. 9, 1975
B 326,514	3,925,080	Dec. 9, 1975	B 350,589	3,927,419	Dec. 16, 1975
B 327,109	3,925,350	Dec. 9, 1975	B 350,708	3,923,871	Dec. 2, 1975
B 327,363	3,923,504	Dec. 2, 1975	B 350,843	3,915,461	Oct. 28, 1975
B 327,612	3,925,620	Dec. 9, 1975	B 351,055	3,914,074	Oct. 21, 1975
B 327,674	3,918,540	Nov. 11, 1975	B 351,218	3,914,186	Oct. 21, 1975
B 327,899	3,925,674	Dec. 9, 1975	B 351,222	3,921,179	Nov. 18, 1975
B 328,164	3,914,703	Oct. 21, 1975	B 351,348	3,923,563	Dec. 2, 1975
B 328,200	3,916,031	Oct. 28, 1975	B 351,421	3,914,733	Oct. 21, 1975
B 328,205	3,914,106	Oct. 21, 1975	B 351,493	3,914,758	Oct. 21, 1975
B 328,210	3,914,275	Oct. 21, 1975	B 351,535	3,915,239	Oct. 28, 1975
B 328,870	3,916,486	Nov. 4, 1975	B 351,665	3,919,701	Nov. 11, 1975
B 329,115	3,924,727	Dec. 9, 1975	B 351,672	3,914,000	Oct. 21, 1975
B 329,476	3,920,562	Nov. 18, 1975	B 351,735	3,913,385	Oct. 21, 1975
B 329,612	3,925,128	Dec. 9, 1975	B 351,863	3,914,700	Oct. 21, 1975
B 329,787	3,920,688	Nov. 18, 1975	B 351,883	3,924,657	Dec. 9, 1975
B 329,816	3,923,947	Dec. 2, 1975	B 351,926	3,914,133	Oct. 21, 1975
B 330,536	3,925,452	Dec. 9, 1975	B 351,939	3,913,480	Oct. 21, 1975
B 330,828	3,913,589	Oct. 21, 1975	B 352,445	3,928,746	Dec. 23, 1975
B 331,417	3,914,157	Oct. 21, 1975	B 352,934	3,913,692	Oct. 21, 1975
B 331,557	3,916,577	Nov. 4, 1975	B 352,950	3,922,590	Nov. 25, 1975
B 331,895	3,916,403	Oct. 28, 1975	B 352,965	3,921,926	Nov. 25, 1975
B 332,527	3,924,017	Dec. 2, 1975	B 353,317	3,916,446	Nov. 4, 1975
B 332,811	3,924,359	Dec. 9, 1975	B 353,387	3,924,404	Dec. 9, 1975
B 333,876	3,921,208	Nov. 18, 1975	B 353,546	3,913,273	Oct. 21, 1975
B 333,928	3,927,172	Dec. 16, 1975	B 354,008	3,925,081	Dec. 9, 1975
B 334,251	3,924,719	Dec. 9, 1975	B 354,098	3,925,547	Dec. 9, 1975
B 334,868	3,919,469	Nov. 11, 1975	B 354,145	3,927,279	Dec. 16, 1975
B 334,985	3,923,912	Dec. 2, 1975	B 354,296	3,914,580	Oct. 21, 1975
B 335,670	3,928,686	Dec. 23, 1975	B 354,510	3,928,658	Dec. 23, 1975
B 335,741	3,925,615	Dec. 9, 1975	B 354,889	3,913,204	Oct. 21, 1975
B 335,773	3,920,953	Nov. 18, 1975	B 354,979	3,914,251	Oct. 21, 1975
B 336,129	3,923,606	Dec. 2, 1975	B 355,095	3,925,656	Dec. 9, 1975
B 336,243	3,925,422	Dec. 9, 1975	B 355,269	3,914,561	Oct. 21, 1975
B 336,345	3,925,179	Dec. 9, 1975	B 355,510	3,913,704	Oct. 21, 1975
B 336,652	3,914,211	Oct. 21, 1975	B 355,595	3,925,649	Dec. 9, 1975
B 336,902	3,918,897	Nov. 11, 1975	B 355,876	3,925,685	Dec. 9, 1975
B 336,946	3,919,425	Nov. 11, 1975	B 356,032	3,928,636	Dec. 23, 1975
B 336,978	3,923,968	Dec. 2, 1975	B 356,253	3,925,025	Dec. 9, 1975
B 337,235	3,919,386	Nov. 11, 1975	B 356,602	3,927,393	Dec. 16, 1975
B 337,409	3,925,258	Dec. 9, 1975	B 356,724	3,924,586	Dec. 9, 1975
B 337,442	3,913,658	Oct. 21, 1975	B 357,039	3,924,406	Dec. 9, 1975
B 337,703	3,914,690	Oct. 21, 1975	B 357,057	3,913,738	Oct. 21, 1975
B 337,787	3,923,506	Dec. 2, 1975	B 357,131	3,924,453	Dec. 9, 1975
B 339,057	3,924,822	Dec. 9, 1975	B 357,402	3,914,180	Oct. 21, 1975
B 339,218	3,925,121	Dec. 9, 1975	B 357,682	3,924,973	Dec. 9, 1975
B 339,699	3,933,527	Jan. 20, 1976	B 357,803	3,919,470	Nov. 11, 1975
B 339,838	3,930,221	Dec. 30, 1975	B 358,174	3,924,958	Dec. 9, 1975
B 340,212	3,922,645	Nov. 25, 1975	B 358,244	3,913,411	Oct. 21, 1975
B 340,833	3,925,208	Dec. 9, 1975	B 358,311	3,923,561	Dec. 2, 1975
B 341,579	3,913,363	Oct. 21, 1975	B 358,939	3,924,713	Dec. 9, 1975
B 342,084	3,928,694	Dec. 23, 1975	B 359,174	3,914,117	Oct. 21, 1975
B 342,423	3,925,334	Dec. 9, 1975	B 359,187	3,924,525	Dec. 9, 1975
B 342,886	3,923,507	Dec. 2, 1975	B 359,540	3,915,235	Oct. 28, 1975
B 343,136	3,919,453	Nov. 11, 1975	B 359,740	3,936,212	Feb. 3, 1976
B 343,240	3,925,693	Dec. 9, 1975	B 359,791	3,929,430	Dec. 30, 1975
B 343,506	3,916,021	Oct. 28, 1975	B 359,825	3,921,344	Nov. 25, 1975
B 343,577	3,921,165	Nov. 18, 1975	B 359,946	3,914,132	Oct. 21, 1975
B 344,203	3,928,719	Dec. 23, 1975	B 359,947	3,914,653	Oct. 21, 1975
B 344,479	3,924,042	Dec. 2, 1975	B 360,208	3,923,750	Dec. 2, 1975
B 345,060	3,916,018	Oct. 28, 1975	B 360,296	3,916,720	Nov. 4, 1975
B 345,384	3,916,146	Oct. 28, 1975	B 360,719	3,915,715	Oct. 28, 1975
B 345,390	3,940,343	Feb. 24, 1976	B 360,910	3,925,696	Dec. 9, 1975
B 345,422	3,914,392	Oct. 21, 1975	B 361,265	3,923,569	Dec. 2, 1975
B 345,527	3,927,365	Dec. 16, 1975	B 361,443	3,927,405	Dec. 16, 1975
B 345,567	3,913,985	Oct. 21, 1975	B 361,569	3,914,554	Oct. 21, 1975
B 346,165	3,913,293	Oct. 21, 1975	B 361,604	3,922,702	Nov. 25, 1975
B 346,210	3,916,142	Oct. 28, 1975	B 361,734	3,915,764	Oct. 28, 1975
B 346,350	3,915,824	Oct. 28, 1975	B 362,589	3,914,012	Oct. 21, 1975
B 346,487	3,927,406	Dec. 16, 1975	B 363,205	3,923,744	Dec. 2, 1975
B 346,585	3,913,820	Oct. 21, 1975	B 363,337	3,928,639	Dec. 23, 1975

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JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 363,457	3,922,595	Nov. 25, 1975	B 387,687	3,918,151	Nov. 11, 1975
B 363,674	3,929,716	Dec. 30, 1975	B 387,761	3,914,245	Oct. 21, 1975
B 363,892	3,913,395	Oct. 21, 1975	B 387,790	3,925,380	Dec. 9, 1975
B 363,962	3,921,826	Nov. 25, 1975	B 387,818	3,918,935	Nov. 11, 1975
B 364,022	3,913,499	Oct. 21, 1975	B 388,580	3,923,712	Dec. 2, 1975
B 364,163	3,916,092	Oct. 28, 1975	B 389,070	3,914,171	Oct. 21, 1975
B 364,241	3,916,668	Nov. 4, 1975	B 389,285	3,914,631	Oct. 21, 1975
B 364,334	3,924,670	Dec. 9, 1975	B 389,327	3,924,504	Dec. 9, 1975
B 364,528	3,919,510	Nov. 11, 1975	B 389,639	3,914,626	Oct. 21, 1975
B 364,786	3,921,673	Nov. 25, 1975	B 389,726	3,921,010	Nov. 18, 1975
B 364,910	3,925,335	Dec. 9, 1975	B 389,807	3,922,623	Nov. 25, 1975
B 365,490	3,918,527	Nov. 11, 1975	B 389,932	3,913,268	Oct. 21, 1975
B 365,834	3,914,702	Oct. 21, 1975	B 389,933	3,913,267	Oct. 21, 1975
B 365,841	3,925,628	Dec. 9, 1975	B 390,679	3,913,668	Oct. 21, 1975
B 365,855	3,917,258	Nov. 4, 1975	B 390,732	3,913,878	Oct. 21, 1975
B 366,287	3,924,946	Dec. 9, 1975	B 391,184	3,914,214	Oct. 21, 1975
B 366,402	3,928,053	Dec. 23, 1975	B 391,210	3,914,220	Oct. 21, 1975
B 366,589	3,914,719	Oct. 21, 1975	B 391,437	3,915,416	Oct. 28, 1975
B 367,021	3,914,752	Oct. 21, 1975	B 391,509	3,925,175	Dec. 9, 1975
B 367,040	3,924,775	Dec. 9, 1975	B 391,675	3,916,017	Oct. 28, 1975
B 367,661	3,914,158	Oct. 21, 1975	B 392,154	3,923,809	Dec. 2, 1975
B 367,739	3,923,648	Dec. 2, 1975	B 392,242	3,926,636	Dec. 16, 1975
B 367,812	3,924,789	Dec. 9, 1975	B 392,696	3,916,175	Oct. 28, 1975
B 368,081	3,924,691	Dec. 9, 1975	B 392,732	3,914,903	Oct. 21, 1975
B 368,387	3,924,923	Dec. 9, 1975	B 392,753	3,916,341	Oct. 28, 1975
B 368,392	3,913,812	Oct. 21, 1975	B 392,894	3,914,763	Oct. 21, 1975
B 368,397	3,914,677	Oct. 21, 1975	B 393,163	3,914,535	Oct. 21, 1975
B 368,862	3,925,549	Dec. 9, 1975	B 393,970	3,914,638	Oct. 21, 1975
B 369,563	3,924,449	Dec. 9, 1975	B 394,088	3,914,740	Oct. 21, 1975
B 369,607	3,923,786	Dec. 2, 1975	B 394,188	3,924,591	Dec. 9, 1975
B 369,997	3,913,533	Oct. 21, 1975	B 394,300	3,914,159	Oct. 21, 1975
B 370,706	3,925,242	Dec. 9, 1975	B 394,712	3,916,306	Oct. 28, 1975
B 371,073	3,930,135	Dec. 30, 1975	B 395,478	3,922,577	Nov. 25, 1975
B 371,085	3,923,783	Dec. 2, 1975	B 395,496	3,919,435	Nov. 11, 1975
B 371,787	3,921,217	Nov. 18, 1975	B 395,671	3,920,418	Nov. 18, 1975
B 371,805	3,914,433	Oct. 21, 1975	B 395,889	3,913,190	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975	B 396,025	3,913,869	Oct. 21, 1975
B 372,823	3,924,660	Dec. 9, 1975	B 396,551	3,921,929	Nov. 25, 1975
B 373,297	3,924,436	Dec. 9, 1975	B 397,027	3,923,736	Dec. 2, 1975
B 373,326	3,920,433	Nov. 18, 1975	B 397,527	3,913,488	Oct. 21, 1975
B 373,428	3,915,511	Oct. 28, 1975	B 397,990	3,914,848	Oct. 28, 1975
B 375,220	3,920,417	Nov. 18, 1975	B 398,262	3,913,481	Oct. 21, 1975
B 375,652	3,921,303	Nov. 25, 1975	B 398,551	3,924,924	Dec. 9, 1975
B 376,504	3,914,570	Oct. 21, 1975	B 398,597	3,913,743	Oct. 21, 1975
B 376,654	3,922,513	Nov. 25, 1975	B 398,625	3,920,996	Nov. 18, 1975
B 376,742	3,924,392	Dec. 9, 1975	B 399,292	3,914,810	Oct. 28, 1975
B 376,799	3,913,955	Oct. 21, 1975	B 399,304	3,919,567	Nov. 11, 1975
B 377,172	3,918,255	Nov. 11, 1975	B 399,349	3,925,694	Dec. 9, 1975
B 377,683	3,924,433	Dec. 9, 1975	B 399,766	3,915,667	Oct. 28, 1975
B 377,833	3,913,884	Oct. 21, 1975	B 400,080	3,925,163	Dec. 9, 1975
B 377,869	3,917,002	Nov. 4, 1975	B 400,293	3,923,719	Dec. 2, 1975
B 378,621	3,923,840	Dec. 2, 1975	B 400,310	3,915,507	Oct. 28, 1975
B 379,038	3,923,994	Dec. 2, 1975	B 401,133	3,924,443	Dec. 9, 1975
B 379,172	3,914,379	Oct. 21, 1975	B 401,992	3,924,898	Dec. 9, 1975
B 379,282	3,913,462	Oct. 21, 1975	B 402,065	3,925,413	Dec. 9, 1975
B 379,955	3,913,157	Oct. 21, 1975	B 402,555	3,914,688	Oct. 21, 1975
B 380,014	3,921,915	Nov. 25, 1975	B 403,140	3,913,486	Oct. 21, 1975
B 380,141	3,925,161	Dec. 9, 1975	B 403,355	3,913,352	Oct. 21, 1975
B 380,310	3,921,048	Nov. 18, 1975	B 403,990	3,914,684	Oct. 21, 1975
B 380,312	3,913,953	Oct. 21, 1975	B 403,996	3,916,016	Oct. 28, 1975
B 380,338	3,924,873	Dec. 9, 1975	B 404,290	3,924,918	Dec. 9, 1975
B 380,446	3,923,836	Dec. 2, 1975	B 404,437	3,915,200	Oct. 28, 1975
B 380,900	3,913,307	Oct. 21, 1975	B 405,136	3,915,565	Oct. 28, 1975
B 380,926	3,925,095	Dec. 9, 1975	B 405,137	3,915,566	Oct. 28, 1975
B 381,074	3,919,583	Nov. 11, 1975	B 405,160	3,924,821	Dec. 9, 1975
B 381,632	3,914,732	Oct. 21, 1975	B 405,248	3,926,294	Dec. 16, 1975
B 381,847	3,921,152	Nov. 18, 1975	B 405,305	3,922,111	Nov. 25, 1975
B 382,018	3,929,742	Dec. 30, 1975	B 405,360	3,913,403	Oct. 21, 1975
B 382,021	3,913,212	Oct. 21, 1975	B 405,495	3,924,577	Dec. 9, 1975
B 382,261	3,914,991	Oct. 28, 1975	B 405,938	3,920,109	Nov. 18, 1975
B 382,290	3,924,717	Dec. 9, 1975	B 406,065	3,914,199	Oct. 21, 1975
B 382,783	3,919,527	Nov. 11, 1975	B 406,357	3,924,529	Dec. 9, 1975
B 382,798	3,924,435	Dec. 9, 1975	B 407,736	3,924,463	Dec. 9, 1975
B 382,840	3,922,007	Nov. 25, 1975	B 407,357	3,924,614	Dec. 9, 1975
B 383,465	3,927,412	Dec. 16, 1975	B 407,728	3,925,240	Dec. 9, 1975
B 383,532	3,914,246	Oct. 21, 1975	B 408,487	3,924,046	Dec. 2, 1975
B 383,581	3,925,318	Dec. 9, 1975	B 408,749	3,914,116	Oct. 21, 1975
B 384,499	3,925,135	Dec. 9, 1975	B 409,026	3,925,497	Dec. 9, 1975
B 384,658	3,913,452	Oct. 21, 1975	B 409,220	3,915,648	Oct. 28, 1975
B 384,773	3,915,416	Oct. 28, 1975	B 409,251	3,922,620	Nov. 25, 1975
B 385,210	3,913,406	Oct. 21, 1975	B 409,657	3,927,362	Dec. 16, 1975
B 386,403	3,924,895	Dec. 9, 1975	B 409,816	3,921,317	Nov. 25, 1975
B 386,592	3,925,305	Dec. 9, 1975	B 410,062	3,923,855	Dec. 2, 1975
B 387,039	3,924,510	Dec. 9, 1975	B 410,168	3,914,717	Oct. 21, 1975
B 387,331	3,913,701	Oct. 21, 1975	B 411,145	3,914,168	Oct. 21, 1975
B 387,363	3,927,378	Dec. 16, 1975	B 411,356	3,919,649	Nov. 11, 1975

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B 411,633	3,914,741	Oct. 21, 1975
B 412,516	3,927,417	Dec. 1[illegible], 1975
B 412,619	3,925,292	Dec. 9, 1975
B 412,867	3,924,587	Dec. 9, 1975
B 413,006	3,914,850	Oct. 28, 1975
B 413,546	3,924,314	Dec. 9, 1975
B 414,129	3,925,484	Dec. 9, 1975
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B 415,113	3,915,717	Oct. 28, 1975
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B 415,845	3,925,076	Dec. 9, 1975
B 415,847	3,914,208	Oct. 21, 1975
B 415,957	3,925,635	Dec. 9, 1975
B 415,977	3,927,359	Dec. 16, 1975
B 416,598	3,923,473	Dec. 2, 1975
B 416,832	3,924,975	Dec. 9, 1975
B 416,710	3,923,746	Dec. 2, 1975
B 416,933	3,924,968	Dec. 9, 1975
B 417,299	3,918,235	Nov. 11, 1975
B 418,121	3,925,023	Dec. 9, 1975
B 418,153	3,925,251	Dec. 9, 1975
B 418,302	3,913,252	Oct. 21, 1975
B 419,327	3,921,197	Nov. 18, 1975
B 419,481	3,924,970	Dec. 9, 1975
B 420,016	3,914,572	Oct. 21, 1975
B 420,148	3,927,414	Dec. 16, 1975
B 420,514	3,923,929	Dec. 2, 1975
B 420,568	3,925,069	Dec. 9, 1975
B 421,026	3,914,785	Oct. 21, 1975
B 421,362	3,924,817	Dec. 9, 1975
B 421,383	3,925,047	Dec. 9, 1975
B 421,797	3,914,023	Oct. 21, 1975
B 422,399	3,928,656	Dec. 23, 1975
B 422,467	3,924,804	Dec. 9, 1975
B 422,949	3,921,873	Nov. 25, 1975
B 424,415	3,919,458	Nov. 11, 1975
B 424,462	3,920,522	Nov. 18, 1975
B 424,572	3,924,979	Dec. 9, 1975
B 424,748	3,924,395	Dec. 9, 1975
B 425,035	3,914,025	Oct. 21, 1975
B 425,345	3,922,015	Nov. 25, 1975
B 425,470	3,923,796	Dec. 2, 1975
B 425,539	3,916,742	Nov. 4, 1975
B 425,541	3,914,051	Oct. 21, 1975
B 425,572	3,923,822	Dec. 2, 1975
B 427,631	3,921,433	Nov. 25, 1975
B 428,177	3,914,624	Oct. 21, 1975
B 428,795	3,921,056	Nov. 18, 1975
B 429,442	3,923,485	Dec. 2, 1975
B 430,106	3,918,941	Nov. 11, 1975
B 430,140	3,922,084	Nov. 25, 1975
B 430,798	3,918,204	Nov. 11, 1975
B 430,944	3,922,096	Nov. 25, 1975
B 432,373	3,919,670	Nov. 11, 1975
B 433,587	3,914,567	Oct. 21, 1975
B 435,343	3,919,244	Nov. 11, 1975
B 435,844	3,925,170	Dec. 9, 1975
B 437,173	3,924,627	Dec. 9, 1975
B 437,172	3,913,251	Oct. 21, 1975
B 437,195	3,914,618	Oct. 21, 1975
B 437,450	3,922,479	Nov. 25, 1975
B 438,053	3,916,013	Oct. 28, 1975
B 438,706	3,925,050	Dec. 9, 1975
B 439,168	3,919,676	Nov. 11, 1975
B 439,669	3,921,499	Nov. 25, 1975
B 440,898	3,921,789	Nov. 25, 1975
B 441,024	3,913,629	Oct. 21, 1975
B 441,416	3,913,851	Oct. 21, 1975
B 442,280	3,914,054	Oct. 21, 1975
B 442,859	3,918,570	Nov. 11, 1975
B 442,919	3,925,483	Dec. 9, 1975
B 444,614	3,927,996	Dec. 23, 1975
B 445,471	3,914,711	Oct. 21, 1975
B 445,740	3,923,612	Dec. 2, 1975
B 448,571	3,924,760	Dec. 9, 1975
B 449,647	3,916,797	Nov. 4, 1975
B 450,499	3,920,526	Nov. 18, 1975
B 450,546	3,924,417	Dec. 9, 1975
B 450,927	3,913,844	Oct. 21, 1975
B 455,520	3,922,543	Nov. 25, 1975
B 455,775	3,914,356	Oct. 21, 1975
B 456,346	3,914,531	Oct. 21, 1975
B 459,425	3,928,773	Dec. 23, 1975
B 461,872	3,919,586	Nov. 11, 1975
B 467,684	3,915,119	Oct. 28, 1975
B 468,198	3,925,340	Dec. 9, 1975

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Arendt, Paul R.: *See—*
Hutchinson, Henry P.; and Arendt, Paul R., Re. 28,725.

Cusano, Carmen M.: *See—*
Holder, Charles B.; Rubin, Isaac D.; and Cusano, Carmen M., Re. 28,723.

Cutton, John G., to United States Steel Corporation. Method of making flat steel files. Re. 28,719, Cl. 72-203.000.

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Sanders, Phillip F., Re. 28,722.

Ehrlich, Engelbert; and Schonfuss, Martin, to Nahwirkmaschinenbau Malimo Karl-Marx-Stadt. Textile material and manufacture. Re. 28,718, Cl. 66-192.000.

Farrell, John J., to Farrell Patent Company. Time saver plastic drawback valve assembly. Re. 28,721, Cl. 425-159.000.

Farrell Patent Company: *See—*
Farrell, John J., Re. 28,721.

Holder, Charles B.; Rubin, Isaac D.; and Cusano, Carmen M., to Texaco Inc. Polycarbonate resins blended with acrylate elastomers for improved impact strength. Re. 28,723, Cl. 260-873.

Hutchinson, Henry P.; and Arendt, Paul R., to Satellite and Space Communications Systems, Inc. Satellite and space communications systems. Re. 28,725, Cl. 343-100.0ST.

Nahwirkmaschinenbau Malimo Karl-Marx-Stadt: *See—*
Ehrlich, Engelbert; and Schonfuss, Martin, Re. 28,718.

Rubin, Isaac D.: *See—*
Holder, Charles B.; Rubin, Isaac D; and Cusano, Carmen M., Re. 28,723.

Sanders, Phillip F., to Dow Chemical Company, The. Butadiene-styrene copolymer-cement composition and method of preparation. Re. 28,722, Cl. 260-29.70S.

Sargent Industries, Inc.: *See—*
Smith, Fred T., Re. 28,717.

Satellite and Space Communications Systems, Inc.: *See—*
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Schonfuss, Martin: *See—*
Ehrlich, Engelbert; and Schonfuss, Martin, Re. 28,718.

Sedlak, Mirko S. Food plate service cover. Re. 28,720, Cl. 206-501.000.

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Sobel, Jay E., to Universal Oil Products Co. Isoparaffin alkylation with a lighter olefin and subsequently with a heavier olefin. Re. 28,724, Cl. 260-683.450.

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Graeper, Michael R. Vehicle fuel tank. 238,941, 2-24-76, Cl. D12—155.

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252	3,939,892
316	3,940,303
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515	3,940,305
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363	3,940,308

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76	3,939,896
103	3,939,897
150	3,939,898
181	3,939,899
276	3,939,900

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8	3,939,902
9	3,939,903
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149	3,939,908

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84	3,939,910
274	3,939,911
295	3,939,912
314	3,939,913

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163	3,939,924
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198	3,939,965
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108	3,939,970
205	3,939,971
219	3,939,972
328	3,939,973
343	3,939,974
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390	3,939,976
400	3,939,977
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139	3,940,329
210	3,940,330

CLASS 209

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74M	3,939,984
211	3,940,331

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77	3,940,335
81	3,940,336
197	3,940,337

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57	3,939,985
74	3,939,986
134	3,939,987

CLASS 212

46A	3,939,988

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75TC	3,939,989

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82	3,939,996
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302	3,939,998
370	3,939,999
766	3,940,000

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98	3,940,587
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433	3,940,589
544	3,940,591
548	3,940,592

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52	3,940,020
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130	3,940,022
153	3,940,023
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212	3,940,026
309	3,940,027
321	3,940,028
340	3,940,029
384	3,940,030
386.5	3,940,031
	3,940,032
452	3,940,033
478	3,940,034
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564	3,940,037

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204	3,940,066
265.11	3,940,067
284R	3,940,068
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333	3,940,070
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587	3,940,072

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